34543

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET, N.E.
ATLANTA, GEORGIA 30365

FEB 0 1 1990
4WD-SISB

Mr. John Taylor, Chief
Land Protection Branch
Georgia Department of Natural Resources
205 Butler Street, SW
Atlanta, Georgia 30334

RE: NFRAP GEORGIA SITES

Dear Mr. Taylor:

This is to inform you that the Georgia CERCLIS sites listed below have been assigned No Further Remedial Action Planned (NFRAP) designations. The reason for the designations are the low Preliminary Hazardous Ranking System (HRS) scores calculated for each of the sites.

Please be advised that the NFRAP designations are based on information currently available and conditions and policies that currently exist.

GAD000640920	Columbus South WWTP
GAD003265527	Simmons Plating Works
GAD981004013	Davidson Mineral Properties Drum Dump
GAD000635476	Clifton Equipment Rental Landfill #2
GAD088935960	Prismo Universal Corporation
GAD064494040	Scholle Corporation
GAD980844161	Wilson Property
GAD065365603	Snyder Brothers, Inc.
GAD069194108	Crosby Stevens Company
GAD061022216	Gulfstream Aerospace Corporation
GAD000735688	Cyanamid Distribution Center
GAD070327267	Borden, Inc.

It is possible that in the future our investigation of a site may be reactivated if new information or policies warrant such an action.

Should you have any questions, please contact me at (404) 347-5065.

Sincerely,

Mario E. Villamarzo
Georgia Project Officer
Site Assessment Section

YELLOW

cc: Murray Warner, NUS

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Mario E. Villamarzo
Georgia Project Officer
Site Assessment Section

cc: Murray Warner, NUS

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET
ATLANTA, GEORGIA 30365

MEMORANDUM

DATE: January 23, 1990

SUBJECT: Conclusion of CERCLA Preremedial Work at
Site Name: Gulf Stream Aerospace Corp - Savannah, GA
EPA ID #: GAD061022216

FROM: Narindar M. Kumar, Chief
South Unit
Site Assessment Section
Waste Programs Branch

TO: Unit Chief ([redacted]) (FL/GA)
Waste Engineering Section
RCRA and Federal Facilities Branch

This is to inform you that we have recently concluded our CERCLA preremedial work at the subject site. Due to the RCRA status of the site, no further remedial action is currently planned under CERCLA authorities. However, if you determine that the RCRA status of this site has changed, or if the responsible party is unwilling or unable to pay for the necessary corrective action, please inform us and we will reactivate our investigation of the site.

cc: Site File

NUS CORPORATION
1927 LAKESIDE PARKWAY
SUITE 614
TUCKER, GEORGIA 30084
404-938-7710

December 28, 1989

Mr. A. R. Hanke
Site Investigation and Support Branch
Waste Management Division
Environmental Protection Agency
345 Courtland Street, N. E.
Atlanta, Georgia 30365

Date: 1-23-90
Site Disposition: ~~Site Deferred To RCRA~~
EPA Project Manager:

No further remedial action planned at this site, site deferred to RCRA, also low score

Subject: Screening Site Inspection, Phase I
Gulfstream Aerospace Corporation
Savannah Municipal Airport
Savannah, Chatham County, Georgia
EPA ID No. GAD061022216
TDD No. F4-8809-06

1510

Dear Mr. Hanke:

FIT 4 conducted a Screening Site Inspection, Phase I, of the Gulfstream Aerospace Corporation of Savannah, Georgia. The inspection included a review of EPA and state file material; completion of a target survey, and a drive-by reconnaissance of the facility.

Gulfstream Aerospace Corporation is located in the northeast corner of Travis Field which serves as the municipal airport for the city of Savannah, Georgia. The site was formerly the location of a Grumman Aircraft plant from the late 1940's until 1976 when it was purchased by Gulfstream Aerospace Corporation. Both companies manufactured aircraft engine parts at this location (Ref. 1). Currently, Gulfstream Aerospace Corporation is an active TSD facility (Refs. 1, 2).

During the manufacturing process of aircraft parts, several hazardous liquid and solid wastes are generated. These wastes include paint stripping wastes, waste paint, spent hazardous solvents (including 1,1,1-trichloroethene, 1,1,2-trichloroethene, 1,1,2-trifloroethane, freon and methylene chloride) and spent non halogenated solvents (including xylene, methyl, isobutyl, ketone, N-butyl alcohol, phenols, toluene, methyl ethyl ketone and isobutanol) (Ref. 2). These wastes are containerized and shipped offsite for disposal (Ref. 2).

When Gulfstream Aerospace Corporation purchased the facility, one area of the property contained over 200 deteriorating and leaking drums containing solvents or wastes of unknown nature (Ref. 1). According to the Georgia Department of Natural Resources, Environmental Protection Division, Gulfstream Aerospace Corporation cleaned up the drum storage area and constructed two surface impoundments for chromium bearing sludge generated during a chrome conversion coating process (Ref. 1). A network of 7 monitoring wells was installed around the site and chromium and solvent contamination was found in four of the seven wells (Ref. 1). Subsequently, the sludge was removed from the surface impoundments, however, contaminated subsoil and groundwater remained after excavation, necessitating closure of the units as landfills (Ref. 4). The proposed full RCRA permit for

this facility specifies conditions for operating the container storage area, maintaining the closed impoundments, and conducting corrective action to restore groundwater to acceptable conditions. No additional disposal of wastes will be allowed by the proposed RCRA permit. The draft RCRA permit has been prepared in accordance with the provisions of the Georgia Rules for Hazardous Waste Management, Chapter 391-3-11 by personnel of the Georgia Environmental Protection Division (Ref. 4).

Gulfstream Aerospace Corporation is located in the Atlantic Coastal Plain Physiographic Province. The climate for the region is characterized by short, mild winters and long, hot summers (Ref. 5, pp. 9-10). Mean annual precipitation for the area is 48 inches, and mean annual lake evaporation is 44 inches, resulting in a net annual precipitation of 4 inches (Ref. 6). Two thousand feet of sedimentary deposits underlie the site and contain numerous water bearing formations, but only the upper 600 to 800 feet of sediments contain groundwater of potable water quality.

The stratigraphic formations underlying the facility that are within this zone are, in descending order, the terrace deposits of Tertiary to Quarternary age, the Hawthorn Formation, Tampa Limestone, undifferentiated rocks of Oligocene age, Ocala Limestone, Gosport Sand, and the Lisbon Formation (Ref. 5, pp. 14-15).

Two water bearing units underlie the facility that contain potable quality groundwater, the unconfined surficial aquifer and the confined principle artesian aquifer of Georgia also known as the Floridan aquifer. The surficial aquifer is contained within the terrace deposits, which may be up to 60 feet thick in the site vicinity (Ref. 5, p. 34). Depth to the water-table ranges from 3 to 12 feet below ground surface (Ref. 7, p. 28). Due to a thin saturated thickness, use of the surficial aquifer is limited. The underlying Hawthorn Formation, which is composed predominantly of silt and clay, acts as the lower confining unit.

The Floridan aquifer, approximately 600 feet thick, is contained within the formations that span from the lower section of the Tampa Limestone to the mid-section of the Lisbon Formation (Ref. 5, pp. 14-15) and is the aquifer of concern for the site vicinity. The Hawthorn Formation, which is approximately 120 feet thick in the Savannah area (Ref. 8) and the upper section of the Tampa Limestone act as the upper confining unit of the principal artesian aquifer (Ref. 5, pp. 22-23, pp. 28-29).

Depth to the top of the principal artesian aquifer is approximately 140 feet below land surface for the Savannah area (Ref. 8). Recharge to the surficial aquifer occurs through local infiltration of precipitation. Recharge in the principal artesian aquifer occurs primarily in the northwest, where the aquifer sediments outcrop, but also from minor induced leakage through the Hawthorn Formation, due to a large cone of depression that has developed within the principal artesian aquifer, in Savannah (Ref. 8).

The majority of the drinking water for the area surrounding Gulfstream is provided by the municipal systems of Garden City, Savannah, Port Wentworth, Pooler, Chatham County, and the Savannah Industrial Water System. Of these, only the Garden City, Savannah, Port Wentworth and Chatham County systems have wells within 3 miles of the Gulfstream facility (Refs. 9, 10). The Garden City municipal system has two wells located approximately 2.9 miles to the southeast of the facility which

serve 8500 persons; the Savannah system has 3 wells approximately 0.7 mile to the south of the facility which serve 1030 persons; the city of Port Wentworth has two wells located approximately 2.4 miles to the northeast serving 3905 persons; Chatham County has two wells located 2.5 miles to the southwest and serve 7 industrial meters (Refs. 9, 10, 11, 12). Residences not served by municipal systems obtain their potable water from wells at least 300 feet in depth (Ref. 13). Approximately 240 residences within 3 miles of the facility are not served by municipal systems (Refs. 9, 10). The closest of these residences lies approximately 1.4 miles to the southwest of the Gulfstream facility (Refs. 9, 10).

Surface water runoff from the facility migrates overland to the southwest approximately 0.1 mile before entering a series of intermittent drainage canals. This drainage system trends to the east and extends approximately 1.4 miles before its confluence with a tidaly influenced tributary of St. Augustine Creek (Ref. 10). This tributary flows 3.2 miles to the northeast before entering St. Augustine Creek, which flows an additional 1.8 miles before entering the Front River. Two miles further downstream the Front River joins the Savannah River at Rhodes Cut (Ref. 10). The Savannah River trends to the southeast and divides into several channels before entering the Atlantic Ocean. The major channels include the Savannah River, the South Channel, the Bull River, and the Wilmington River (Ref. 10). All of the above mentioned rivers support recreational fisheries and in addition, the Savannah and Wilmington Rivers support significant commercial fisheries for shad and blue crab, respectively. The Wilmington River is also considered a nursery area for penaeid shrimp (Refs. 14, 15, 16, 17).

Although some endangered or threatened species, including the shortnosed sturgen, Atlantic green sea turtle, hawksbill turtle, brown pelican, manatee and bald eagle may be found in the Savannah area, there are no critical habitats designated in Chatman County (Refs. 18, 19).

Because the Gulfstream Aerospace facility is currently regulated as an active TSD facility, FIT 4 recommends that no further action be planned for this site. If I can be of any further assistance to you regarding this site please feel free to contact me.

Very truly yours,

Ronald Wilde

Ron Wilde
Project Manager

Approved:

Greg Schank

RW/dwf

Enclosures

cc: Mario Villamarzo

REFERENCES

1. Steve Walker, Preliminary Assessment, Gulfstream American Corporation, Georgia, Dept. of Natural Resources, Environmental Protection Division, January 29, 1985.

2. Fact Sheet, Gulfstream Aerospace Corporation, Savannah Georgia, Georgia Dept. of Natural Resources, Environmental Protection Division.

3. Bill Mundy, Environmental Protection Division, Georgia Dept. of Natural Resources, April 8, 1987. Trip Report Gulfstream Aerospace Corporation, Savannah, Georgia.

4. Georgia Environmental Protection Division, Hazardous Waste Management Program, Public Notice of Intent to Issue Permit, Gulfstream American Aerospace Corporation, August 7, 1987.

5. Harlan B. Couts and Ellis Donsky, "Salt-Water Encroachment Geology and Ground-Water Resources of Savannah Area Georgia and South Carolina," Geological Survey Water-Supply Paper 1611, Washington D.C.: GPO, 1963.

6. U.S. Department of Commerce, Climatic Atlas of the United States, (Washington D.C.: GPO, June, 1968) Reprint: 1983, National Oceanic and Atmospheric Administration.

7. J.S. Clarke et al., "Ground-Water Data for Georgia, 1986, "U.S. Geological Survey Open-File Report 87-376, 1987.

8. Robert B. Randolph, Hydrologist, U.S. Geological Survey, Doraville, Georgia, telephone conversation with John Jenkins, NUS Corporation, April 8, 1988. Subject: Floridan Aquifer in the Savannah Area.

9. NUS Corporation Field Logbook No. F41056 for Hercules Disposal, TDD No. F4-8809-05. Documentation of facility reconnaissance, October 26, 1988.

10. United States Geological Survey, 7.5 minute series Topographic Quadrangle Maps of Georgia: Garden City (1971 Photo Revised), Meldrim (1976 Photo Revised), Meldrim S.E. (1976 Photo Revised) scale 1:24,000.

11. Federal Reporting Data System (FERDS) Report for the state of Georgia, Community and non-community water systems; printout obtained from EPA Region 4 Drinking Water Office (Atlanta: November 1, 1988).

12. Robert B. Dawson, Superintendent, Chatham County Water and Sewer, letter to Geoffrey Carton, Biologist, NUS Corporation, November 9, 1988. Subject: County Water Service.

13. Dennis Lowe, Lowe's well drilling, telephone conversation with Geoffrey Carton, NUS Corporation, October 18, 1988. Subject: Potable wells in Chatham County.

14. Sgt. Tim Vincent, Georgia Game and Fish Division, telephone conversation with Steve Walker, NUS Corporation April 11, 1988. Subject: Fishing on the Savannah River.

15. Dennis Schmidt, Georgia DNR, telephone conversation with Geoffrey Carton, NUS Corporation November 21, 1988. Subject: Fishing in the Savannah Area.

16. Geoffrey Carton, NUS Corporation, telephone conversation with Gordon Rogers, Georgia Dept. of Natural Resources, December 21, 1988. Subject: Commercial fishing on the Savannah and Wilmington Rivers.

17. Nelson Johnson, National Marine Fisheries Service, U.S. Department of Commerce, letter to Bob Donaghue, NUS Corporation, February 10, 1989. Subject: Transmittal of preliminary fish landings data.

18. Geoffrey Carton, NUS Corporation, telephone conversation with Chuck Rabolli, Georgia Dept. Natural Resources, September 21, 1988. Subject: Endangered and threatened species in Georgia.

19. U.S. Fish and Wildlife Service, Endangered and Threatened Species of the Southeastern United States, (Atlanta, Georgia: 1988).

RCRA/NPL POLICY QUESTIONNAIRE FOR INITIAL SCREENING

Site Name: Gulfstream Aerospace

City: Port Wentworth State: GA

EPA I.D. Number: GA9061022216

Type of Facility: Generator ✓ Transporter ___ Disposal ___
Treatment ___ Storage (more than 90 days) ✓

I. RCRA APPLICABILITY	yes	no
Has this facility treated, stored or disposed of a RCRA hazardous waste since Nov. 19, 1980?	✓	___
Has a RCRA Facility Assessment (RFA) been performed on this site?	✓	___
Does the facility have a RCRA operating or post-closure permit? If so, date issued Sept 28 1987	✓	___
Did the facility file a RCRA Part A application?	✓	___
If so:		
1) Does the facility currently have interim status?	___	✓
2) Did the facility withdraw its interim status?	___	✓
3) Is the facility a known or possible protective filer?	___	✓
Is the facility a late (after Nov. 19, 1980) or non-filer that has been identified by EPA or the State?	___	✓

STOP HERE IF ALL ANSWERS TO QUESTIONS IN SECTION I ARE NO

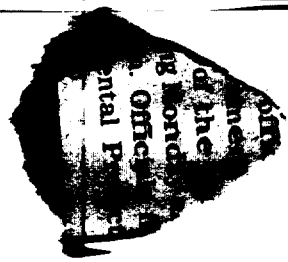
II. FINANCIAL STATUS		
Is the facility owned by an entity that has filed for bankruptcy under federal or State laws?	___	✓

III. RCRA ENFORCEMENT STATUS		
Has the facility lost authorization to operate or had its interim status revoked?	___	✓
Has the facility been involved in any other RCRA enforcement action?	___	✓

EPA

Potential Hazardous Waste Site

Site Inspection Report



Site Inspection Report

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 1 - SITE LOCATION AND INSPECTION INFORMATION

EPA

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
GA	D06/0292 16

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site)	02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER
GULFSTREAM AEROSPACE	SAVANNAH MUNICIPAL AIRPORT

03 CITY	04 STATE	05 ZIP CODE	06 COUNTY	07 COUNTY CODE	08 CONG DIST
SAVANNAH	GA	31402	CHATHAM	051	01

09 COORDINATES LATITUDE	LONGITUDE
32 08 12.0"	081 11' 32.0"

10 TYPE OF OWNERSHIP (Check one)
☒ A. PRIVATE ☐ B. FEDERAL _____ ☐ C. STATE ☐ D. COUNTY ☐ E. MUNICIPAL ☐ F. OTHER _____ ☐ G. UNKNOWN

III. INSPECTION INFORMATION

01 DATE OF INSPECTION	02 SITE STATUS	03 YEARS OF OPERATION
9 27 88 (MONTH DAY YEAR)	☒ ACTIVE ☐ INACTIVE	1940's (BEGINNING YEAR) PRESENT (ENDING YEAR) ☐ UNKNOWN

04 AGENCY PERFORMING INSPECTION (Check all that apply)
☐ A. EPA ☒ B. EPA CONTRACTOR _____ (Name of firm) ☐ C. MUNICIPAL ☐ D. MUNICIPAL CONTRACTOR _____ (Name of firm)
☐ E. STATE ☐ F. STATE CONTRACTOR _____ (Name of firm) ☐ G. OTHER _____ (Specify)

05 CHIEF INSPECTOR	06 TITLE	07 ORGANIZATION	08 TELEPHONE NO
JANET MARTIN	GEOLOGY DEPARTMENT	NUS	404-938-7710
09 OTHER INSPECTORS	10 TITLE	11 ORGANIZATION	12 TELEPHONE NO
Lisa Ramsey	"	"	( ) "
			( )
			( )
			( )
			( )

13 SITE REPRESENTATIVES INTERVIEWED	14 TITLE	15 ADDRESS	16 TELEPHONE NO
			( )
			( )
			( )
			( )
			( )
			( )
			( )

17 ACCESS GAINED BY (Check one)	18 TIME OF INSPECTION	19 WEATHER CONDITIONS
☒ PERMISSION ☐ WARRANT	9/27/88	GOOD

IV. INFORMATION AVAILABLE FROM

01 CONTACT	02 OF (Agency/Organization)	03 TELEPHONE NO.
		( )

04 PERSON RESPONSIBLE FOR SITE INSPECTION FORM	05 AGENCY	06 ORGANIZATION	07 TELEPHONE NO.	08 DATE
GREGORY SHECKMAN	NUS		938-7710	12/88 (MONTH DAY YEAR)

EPA FORM 2070-13 (7-81)

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 2 - WASTE INFORMATION

EPA

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
GA	D061022216

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 PHYSICAL STATES (Check all that apply)

- ☐ A SOLID
- ☐ B POWDER, FINES
- ☒ C SLUDGE
- ☐ D OTHER _____ (Specify)
- ☐ E SLURRY
- ☐ F LIQUID
- ☐ G GAS

02 WASTE QUANTITY AT SITE
(Measures of waste quantities must be independent)

TONS 997.84
CUBIC YARDS _____
NO OF DRUMS _____

03 WASTE CHARACTERISTICS (Check all that apply)

- ☒ A TOXIC
- ☐ B CORROSIVE
- ☐ C RADIOACTIVE
- ☒ D PERSISTENT
- ☐ E SOLUBLE
- ☐ F INFECTIOUS
- ☐ G FLAMMABLE
- ☐ H IGNITABLE
- ☐ I HIGHLY VOLATILE
- ☐ J EXPLOSIVE
- ☐ K REACTIVE
- ☐ L INCOMPATIBLE
- ☐ M NOT APPLICABLE

III. WASTE TYPE

CATEGORY	SUBSTANCE NAME	01 GROSS AMOUNT	02 UNIT OF MEASURE	03 COMMENTS
SLU	SLUDGE	997.84	TONS	WASTE ON HAND 12/85
OLW	OILY WASTE			
SOL	SOLVENTS			
PSD	PESTICIDES			
OCC	OTHER ORGANIC CHEMICALS			
IOC	INORGANIC CHEMICALS			
ACD	ACIDS			
BAS	BASES			
MES	HEAVY METALS			

IV. HAZARDOUS SUBSTANCES (See Appendix for most frequently cited CAS Numbers)

01 CATEGORY	02 SUBSTANCE NAME	03 CAS NUMBER	04 STORAGE/DISPOSAL METHOD	05 CONCENTRATION	06 MEASURE OF CONCENTRATION

V. FEEDSTOCKS (See Appendix for CAS Numbers)

CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER	CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER
FDS			FDS		
FDS			FDS		
FDS			FDS		
FDS			FDS		

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sampling results, reports)

EPA FILES

EPA FORM 2070-13(7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
GA	D061022216

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 ☐ A. GROUNDWATER CONTAMINATION — 02 ☐ OBSERVED (DATE: _____) — ☒ POTENTIAL — ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION

monitoring wells close to site show contamination in upper aquifer. Not used for drinking water.

01 ☐ B. SURFACE WATER CONTAMINATION — 02 ☐ OBSERVED (DATE: _____) — ☒ POTENTIAL — ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION

01 ☐ C. CONTAMINATION OF AIR — 02 ☐ OBSERVED (DATE: _____) — ☐ POTENTIAL — ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION

01 ☐ D. FIRE/EXPLOSIVE CONDITIONS — 02 ☐ OBSERVED (DATE: _____) — ☐ POTENTIAL — ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION

01 ☒ E. DIRECT CONTACT — 02 ☐ OBSERVED (DATE: _____) — ☒ POTENTIAL — ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION

Sludge pits closed - possible contamination of workers due to storage of waste on site.

01 ☒ F. CONTAMINATION OF SOIL — 02 ☐ OBSERVED (DATE: _____) — ☒ POTENTIAL — ☐ ALLEGED
03 AREA POTENTIALLY AFFECTED: _____ (Acres) — 04 NARRATIVE DESCRIPTION

waste was never totally removed from sludge pits due to contact with water table

01 ☐ G. DRINKING WATER CONTAMINATION — 02 ☐ OBSERVED (DATE: _____) — ☐ POTENTIAL — ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION

Contamination of upper aquifer not used for drinking.

01 ☐ H. WORKER EXPOSURE/INJURY — 02 ☐ OBSERVED (DATE: _____) — ☒ POTENTIAL — ☐ ALLEGED
03 WORKERS POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION

01 ☐ I. POPULATION EXPOSURE/INJURY — 02 ☐ OBSERVED (DATE: _____) — ☐ POTENTIAL — ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION

Possible exposure for workers - high security area - totally fenced.

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION
01 STATE: GA | 02 SITE NUMBER: 006022216

II. HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

01 ☐ J DAMAGE TO FLORA — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION
Area does not appear stressed.

01 ☐ K DAMAGE TO FAUNA — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION (Include names(s) of species)

01 ☐ L CONTAMINATION OF FOOD CHAIN — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ M UNSTABLE CONTAINMENT OF WASTES (Spills/Runoff, Standing liquids, Leaking drums) — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION
Waste contained - old sludge pits covered by remedial action.

01 ☐ N DAMAGE TO OFFSITE PROPERTY — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ O CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ P ILLEGAL/UNAUTHORIZED DUMPING — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION
Site under permit

06 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

III. TOTAL POPULATION POTENTIALLY AFFECTED: 160,000

IV. COMMENTS
Population possibly in contact due to ~~wells~~ deep wells in 4 mile radius.

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)
EPA FILES

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION
PART 4 - PERMIT AND DESCRIPTIVE INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
GA	D006022216

II. PERMIT INFORMATION

01 TYPE OF PERMIT ISSUED (Check all that apply)	02 PERMIT NUMBER	03 DATE ISSUED	04 EXPIRATION DATE	05 COMMENTS
☐ A. NPDES				
☐ B. UIC				
☐ C. AIR				
☐ D. RCRA				
☐ E. RCRA INTERIM STATUS				
☐ F. SPCC PLAN				
☒ G. STATE (Specify)	HW-046(S+D)	9/25/86	9/28/97	Provides for post-closure care for both impoundments
☐ H. LOCAL (Specify)				
☐ I. OTHER (Specify)				
☐ J. NONE				

III. SITE DESCRIPTION

01 STORAGE/DISPOSAL (Check all that apply)	02 AMOUNT	03 UNIT OF MEASURE
☐ A. SURFACE IMPOUNDMENT		
☐ B. PILES		
☐ C. DRUMS, ABOVE GROUND		
☒ D. TANK, ABOVE GROUND	22,500	gallons
☐ E. TANK, BELOW GROUND		
☐ F. LANDFILL		
☐ G. LANDFARM		
☐ H. OPEN DUMP		
☐ I. OTHER (Specify)		

04 TREATMENT (Check all that apply)
☐ A. INCINERATION
☐ B. UNDERGROUND INJECTION
☐ C. CHEMICAL/PHYSICAL
☐ D. BIOLOGICAL
☐ E. WASTE OIL PROCESSING
☐ F. SOLVENT RECOVERY
☒ G. OTHER RECYCLING/RECOVERY
☐ H. OTHER (Specify)

05 OTHER
☒ A. BUILDINGS ON SITE

06 AREA OF SITE
_____ Acres

07 COMMENTS

Outside storage area for wastes without free liquids and a covered container storage area with secondary containment for spills, etc.

IV. CONTAINMENT

01 CONTAINMENT OF WASTES (Check one)

☐ A. ADEQUATE, SECURE ☒ B. MODERATE ☐ C. INADEQUATE, POOR ☐ D. INSECURE, UNSOUND, DANGEROUS

02 DESCRIPTION OF DRUMS, DIKING, LINERS, BARRIERS, ETC.

Old sludge pits were dredged but they were unable to remove all waste due to contact with water table.

V. ACCESSIBILITY

01 WASTE EASILY ACCESSIBLE: ☐ YES ☒ NO

02 COMMENTS

Contained

VI. SOURCES OF INFORMATION (Cite specific references, e.g. state files, sample analysis, reports)

EPA FILES

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
GA	D06/0022216

II. DRINKING WATER SUPPLY

01 TYPE OF DRINKING SUPPLY	SURFACE	WELL	02 STATUS	ENDANGERED	AFFECTED	MONITORED	03 DISTANCE TO SITE
COMMUNITY	A ☐	B. ☐		A. ☐	B. ☐	C. ☐	A. _____ (mi)
NON-COMMUNITY	C ☐	D ☒		D. ☐	E. ☐	F ☒	B. 4000 ft (mi)

III. GROUNDWATER

01 GROUNDWATER USE IN VICINITY

☐ A. ONLY SOURCE FOR DRINKING ☒ B. DRINKING; COMMERCIAL, INDUSTRIAL, IRRIGATION ☒ C. COMMERCIAL, INDUSTRIAL, IRRIGATION ☐ D. NOT USED, UNUSEABLE

02 POPULATION SERVED BY GROUND WATER	03 DISTANCE TO NEAREST DRINKING WATER WELL
1030	4000 /

04 DEPTH TO GROUNDWATER	05 DIRECTION OF GROUNDWATER FLOW	06 DEPTH TO AQUIFER OF CONCERN	07 POTENTIAL YIELD OF AQUIFER	08 SOLE SOURCE AQUIFER
7 (ft)	EAST	250' (ft)	250' (gpd)	☐ YES ☐ NO ✓

09 DESCRIPTION OF WELLS

wells 17, 18, 19 are at the airfield and are used by approx 1000 people at the field and at Gulfstream.

10 RECHARGE AREA		11 DISCHARGE AREA	
☐ YES ☐ NO	COMMENTS	☐ YES ☐ NO	COMMENTS

IV. SURFACE WATER

01 SURFACE WATER USE

☐ A. RESERVOIR, RECREATION DRINKING WATER SOURCE ☐ B. IRRIGATION, ECONOMICALLY IMPORTANT RESOURCES ☒ C. COMMERCIAL, INDUSTRIAL ☐ D. NOT CURRENTLY USED

02 AFFECTED/POTENTIALLY AFFECTED BODIES OF WATER

NAME:	AFFECTED	DISTANCE TO SITE
Savannah River	☐	<2> (mi)
	☐	(mi)
	☐	(mi)

V. DEMOGRAPHIC AND PROPERTY INFORMATION

01 TOTAL POPULATION WITHIN			02 DISTANCE TO NEAREST POPULATION
ONE (1) MILE OF SITE	TWO (2) MILES OF SITE	THREE (3) MILES OF SITE	
A. 0 NO. OF PERSONS	B. 1865 NO. OF PERSONS	C. 5509 NO. OF PERSONS	1-2 (mi)

03 NUMBER OF BUILDINGS WITHIN TWO (2) MILES OF SITE	04 DISTANCE TO NEAREST OFF-SITE BUILDING
	200 / (mi)

05 POPULATION WITHIN VICINITY OF SITE

1030 - airfield and Gulfstream

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
GA	0061022216

VI. ENVIRONMENTAL INFORMATION

01 PERMEABILITY OF UNSATURATED ZONE (Check one)

☐ A. 10^{-6} – 10^{-8} cm/sec ☒ B. 10^{-4} – 10^{-6} cm/sec ☐ C. 10^{-4} – 10^{-3} cm/sec ☐ D. GREATER THAN 10^{-3} cm/sec

02 PERMEABILITY OF BEDROCK (Check one)

☐ A. IMPERMEABLE (Less than 10^{-6} cm/sec) ☐ B. RELATIVELY IMPERMEABLE (10^{-4} – 10^{-6} cm/sec) ☐ C. RELATIVELY PERMEABLE (10^{-2} – 10^{-4} cm/sec) ☐ D. VERY PERMEABLE (Greater than 10^{-2} cm/sec)

03 DEPTH TO BEDROCK	04 DEPTH OF CONTAMINATED SOIL ZONE	05 SOIL pH	
Confined (ft)	7 (ft)		

06 NET PRECIPITATION	07 ONE YEAR 24 HOUR RAINFALL	08 SLOPE		
		SITE SLOPE	DIRECTION OF SITE SLOPE	TERRAIN AVERAGE SLOPE
(in)	4.0 (in)	1%	EAST-NE	1%

09 FLOOD POTENTIAL	10
SITE IS IN _____ YEAR FLOODPLAIN	☐ SITE IS ON BARRIER ISLAND, COASTAL HIGH HAZARD AREA, RIVERINE FLOODWAY

11 DISTANCE TO WETLANDS (5 acre minimum)

ESTUARINE	OTHER
A. ¼ (mi)	B. _____ (mi)

12 DISTANCE TO CRITICAL HABITAT (of endangered species)

10,000 ft

ENDANGERED SPECIES: SHORT NOSED STURGEON

13 LAND USE IN VICINITY

DISTANCE TO:

COMMERCIAL/INDUSTRIAL	RESIDENTIAL AREAS; NATIONAL/STATE PARKS, FORESTS, OR WILDLIFE RESERVES	AGRICULTURAL LANDS: PRIME AG LAND	AGRICULTURAL LANDS: AG LAND
A. < 1 (mi)	B. 3 (mi)	C. _____ (mi)	D. _____ (mi)

14 DESCRIPTION OF SITE IN RELATION TO SURROUNDING TOPOGRAPHY

VII. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

EPA FILES

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 6 - SAMPLE AND FIELD INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
GA	006/023216

II. SAMPLES TAKEN

SAMPLE TYPE	01 NUMBER OF SAMPLES TAKEN	02 SAMPLES SENT TO	03 ESTIMATED DATE RESULTS AVAILABLE
GROUNDWATER			
SURFACE WATER			
WASTE			
AIR			
RUNOFF			
SPILL			
SOIL			
VEGETATION			
OTHER			

III. FIELD MEASUREMENTS TAKEN

01 TYPE	02 COMMENTS

IV. PHOTOGRAPHS AND MAPS

01 TYPE ☒ GROUND ☐ AERIAL

02 IN CUSTODY OF NUS
(Name of organization or individual)

03 MAPS ☒ YES ☐ NO

04 LOCATION OF MAPS NUS FILES

V. OTHER FIELD DATA COLLECTED (Provide narrative description)

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

EPA FILES
NUS FILES

EPA FORM 2070-13 (7-81)

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 7 - OWNER INFORMATION

EPA

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
GA	D0061C222/6

II. CURRENT OWNER(S)

01 NAME	02 D+B NUMBER
GULFSTREAM AEROSPACE	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	**04 SIC CODE**
SAVANNAH AIRPORT	
05 CITY	**06 STATE** / **07 ZIP CODE**
PORT WENTWORTH	GA / 31402

01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	**04 SIC CODE**
05 CITY	**06 STATE** / **07 ZIP CODE**

01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	**04 SIC CODE**
05 CITY	**06 STATE** / **07 ZIP CODE**

01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	**04 SIC CODE**
05 CITY	**06 STATE** / **07 ZIP CODE**

PARENT COMPANY (if applicable)

08 NAME	09 D+B NUMBER
10 STREET ADDRESS (P.O. Box, RFD #, etc.)	**11 SIC CODE**
12 CITY	**13 STATE** / **14 ZIP CODE**

(The Parent Company block is repeated four times, all blank.)

III. PREVIOUS OWNER(S) (List most recent first)

01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	**04 SIC CODE**
05 CITY	**06 STATE** / **07 ZIP CODE**

(Repeated three times, all blank.)

IV. REALTY OWNER(S) (If applicable; list most recent first)

01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	**04 SIC CODE**
05 CITY	**06 STATE** / **07 ZIP CODE**

(Repeated three times, all blank.)

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

EPA FILES

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 8 - OPERATOR INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
GA	D0061022216

II. CURRENT OPERATOR (Provide if different from owner)

01 NAME	02 D+B NUMBER
SAME	

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

08 YEARS OF OPERATION	09 NAME OF OWNER

OPERATOR'S PARENT COMPANY (If applicable)

10 NAME	11 D+B NUMBER

12 STREET ADDRESS (P.O. Box, RFD #, etc.)	13 SIC CODE

14 CITY	15 STATE	16 ZIP CODE

III. PREVIOUS OPERATOR(S) (List most recent first; provide only if different from owner)

01 NAME	02 D+B NUMBER

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD

01 NAME	02 D+B NUMBER

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD

01 NAME	02 D+B NUMBER

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD

PREVIOUS OPERATORS' PARENT COMPANIES (If applicable)

10 NAME	11 D+B NUMBER

12 STREET ADDRESS (P.O. Box, RFD #, etc.)	13 SIC CODE

14 CITY	15 STATE	16 ZIP CODE

10 NAME	11 D+B NUMBER

12 STREET ADDRESS (P.O. Box, RFD #, etc.)	13 SIC CODE

14 CITY	15 STATE	16 ZIP CODE

10 NAME	11 D+B NUMBER

12 STREET ADDRESS (P.O. Box, RFD #, etc.)	13 SIC CODE

14 CITY	15 STATE	16 ZIP CODE

IV. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

EPA FILES

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 9 - GENERATOR/TRANSPORTER INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
GA	006/052/6

II. ON-SITE GENERATOR

01 NAME	02 D+B NUMBER
SAME	

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

III. OFF-SITE GENERATOR(S)

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE	05 CITY	06 STATE / 07 ZIP CODE
01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE	05 CITY	06 STATE / 07 ZIP CODE

IV. TRANSPORTER(S)

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE	05 CITY	06 STATE / 07 ZIP CODE
01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE	05 CITY	06 STATE / 07 ZIP CODE

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

EPA FILES

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION
01 STATE: GA | 02 SITE NUMBER: 0060222 16

II. PAST RESPONSE ACTIVITIES

01 ☐ A. WATER SUPPLY CLOSED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ B. TEMPORARY WATER SUPPLY PROVIDED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ C. PERMANENT WATER SUPPLY PROVIDED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ D. SPILLED MATERIAL REMOVED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ E. CONTAMINATED SOIL REMOVED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ F. WASTE REPACKAGED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ G. WASTE DISPOSED ELSEWHERE — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☒ H. ON SITE BURIAL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
Sludge pits covered

01 ☐ I. IN SITU CHEMICAL TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ J. IN SITU BIOLOGICAL TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ K. IN SITU PHYSICAL TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ L. ENCAPSULATION — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ M. EMERGENCY WASTE TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ N. CUTOFF WALLS — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ O. EMERGENCY DIKING/SURFACE WATER DIVERSION — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ P. CUTOFF TRENCHES/SUMP — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ Q. SUBSURFACE CUTOFF WALL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION
01 STATE: GA | 02 SITE NUMBER: D06022216

II PAST RESPONSE ACTIVITIES (Continued)

01 ☐ R. BARRIER WALLS CONSTRUCTED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☒ S. CAPPING/COVERING — 02 DATE 85 — 03 AGENCY _____
04 DESCRIPTION
Sludge pits covered

01 ☐ T. BULK TANKAGE REPAIRED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ U. GROUT CURTAIN CONSTRUCTED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ V. BOTTOM SEALED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ W. GAS CONTROL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ X. FIRE CONTROL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ Y. LEACHATE TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ Z. AREA EVACUATED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ 1. ACCESS TO SITE RESTRICTED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ 2. POPULATION RELOCATED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ 3. OTHER REMEDIAL ACTIVITIES — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

III. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sampling analysis, reports)

EPA FILES

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 11 - ENFORCEMENT INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
GA	006.0223/6

II. ENFORCEMENT INFORMATION

01 PAST REGULATORY ENFORCEMENT ACTION ☒ YES ☐ NO

02 DESCRIPTION OF FEDERAL, STATE, LOCAL REGULATORY/ENFORCEMENT ACTION

Sludge pits capped and closed. Unable to remove all contamination due to contact with water table.

III. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

EPA FILES

EPA FORM 2070-13 (7-81)

SITE SUMMARY
GULFSTREAM AMERICAN CORPORATION
SAVANNAH, GEORGIA
GAD061022216

The site is located in the northeast corner of Travis Field which serves as the municipal airport for the City of Savannah. The site was the location of a Grumman aircraft plant from the late 1940's until 1976. The facility was purchased in 1976 by Gulfstream Aerospace Corporation. Both Grumman and Gulfstream apparently manufactured parts for aircraft engines at the facility.

When Gulfstream purchased the facility, one area of the property (cross-hatched, Attachment B) contained over 200 deteriorating and leaking drums, many of which contained solvents or wastes of an unknown nature. According to Mark Smith, EPD compliance officer for the facility, the drum site was cleaned up by Gulfstream and two impoundments were constructed nearby to hold chromium bearing sludge from their waste water treatment plant. Four of the seven monitoring wells located around the site have solvent and chromium contamination. Gulfstream has submitted their GHWMA Part B permit and is currently assessing the extent of ground water contamination at the site.

The site is assessed as "no priority" for inspection because the Georgia Hazardous Waste Management Act regulates all prior releases at active TSD facilities. All corrective actions regarding hazardous waste at the facility will be the responsibility of the Facilities Compliance Unit of the Industrial and Hazardous Waste Management Program of the Georgia EPD.

CSW/mcw050

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 1 - SITE INFORMATION AND ASSESSMENT

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
GA	D061022216

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site)	02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER
Gulfstream American Corporation	Savannah Municipal Airport

03 CITY	04 STATE	05 ZIP CODE	06 COUNTY	07 COUNTY CODE	08 CONG DIST
Savannah	GA	331402	Chatham	051	01

09 COORDINATES LATITUDE	LONGITUDE
32° 08' 12.0"	081° 11' 37.0"

10 DIRECTIONS TO SITE (Starting from nearest public road)

Take Georgia Highway 21 north from Savannah to a point 1,000 feet south of the Savannah filtration plant. Turn left and proceed for 1 mile.

III. RESPONSIBLE PARTIES

01 OWNER (If known)	02 STREET (Business, mailing, residential)
Gulfstream Aerospace Corporation	P. O. Box 2206

03 CITY	04 STATE	05 ZIP CODE	06 TELEPHONE NUMBER
Savannah	GA	31402	(912) 964-3160

07 OPERATOR (If known and different from owner)	08 STREET (Business, mailing, residential)

09 CITY	10 STATE	11 ZIP CODE	12 TELEPHONE NUMBER
			( )

13 TYPE OF OWNERSHIP (Check one)

☒ A. PRIVATE ☐ B. FEDERAL: _____ (Agency name) ☐ C. STATE ☐ D. COUNTY ☐ E. MUNICIPAL

☐ F. OTHER: _____ (Specify) ☐ G. UNKNOWN

14 OWNER/OPERATOR NOTIFICATION ON FILE (Check all that apply)

☒ A. RCRA 3001 DATE RECEIVED: 03/18/81 (MONTH DAY YEAR) ☐ B. UNCONTROLLED WASTE SITE (CERCLA 103 c) DATE RECEIVED: / / (MONTH DAY YEAR) ☐ C. NONE

IV. CHARACTERIZATION OF POTENTIAL HAZARD

01 ON SITE INSPECTION

☒ YES DATE 07/21/83 (MONTH DAY YEAR)
☐ NO

by Mike Arnett

BY (Check all that apply)

☐ A. EPA ☐ B. EPA CONTRACTOR ☒ C. STATE ☐ D. OTHER CONTRACTOR
☐ E. LOCAL HEALTH OFFICIAL ☐ F. OTHER: _____ (Specify)

CONTRACTOR NAME(S): _____

02 SITE STATUS (Check one)

☒ A. ACTIVE ☐ B. INACTIVE ☐ C. UNKNOWN

03 YEARS OF OPERATION

about 1945 (BEGINNING YEAR) | continuing (ENDING YEAR) ☐ UNKNOWN

04 DESCRIPTION OF SUBSTANCES POSSIBLY PRESENT, KNOWN, OR ALLEGED

Methylene Chloride
lead
cadmium
chromium
arsenic
methyl ethyl ketone

05 DESCRIPTION OF POTENTIAL HAZARD TO ENVIRONMENT AND/OR POPULATION

The Georgia Hazardous Waste Management Act regulates all prior releases at active TSD facilities.

V. PRIORITY ASSESSMENT

01 PRIORITY FOR INSPECTION (Check one. If high or medium is checked, complete Part 2 - Waste Information and Part 3 - Description of Hazardous Conditions and Incidents)

☐ A. HIGH (Inspection required promptly) ☐ B. MEDIUM (Inspection required) ☐ C. LOW (Inspect on time available basis) ☒ D. NONE (No further action needed, complete current disposition form)

VI. INFORMATION AVAILABLE FROM

01 CONTACT	02 OF (Agency/Organization)	03 TELEPHONE NUMBER
William Overstreet	Gulfstream Aerospace Corporation	(912) 964-3160

04 PERSON RESPONSIBLE FOR ASSESSMENT	05 AGENCY	06 ORGANIZATION	07 TELEPHONE NUMBER	08 DATE
Steve Walker	DNR-EPD	RAU	(404) 656-7404	01/29/85 (MONTH DAY YEAR)

EPA FORM 2070-12 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 2 - WASTE INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
GA	D061022216

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 PHYSICAL STATES (Check all that apply)

- [ ] A. SOLID
- [ ] B. POWDER, FINES
- [X] C. SLUDGE
- [ ] D. OTHER _____ (Specify)
- [ ] E. SLURRY
- [X] F. LIQUID
- [ ] G. GAS

02 WASTE QUANTITY AT SITE (Measures of waste quantities must be independent)

TONS _____

CUBIC YARDS _____

NO OF DRUMS _____

03 WASTE CHARACTERISTICS (Check all that apply)

- [X] A. TOXIC
- [ ] B. CORROSIVE
- [ ] C. RADIOACTIVE
- [ ] D. PERSISTENT
- [ ] E. SOLUBLE
- [ ] F. INFECTIOUS
- [ ] G. FLAMMABLE
- [X] H. IGNITABLE
- [ ] I. HIGHLY VOLATILE
- [ ] J. EXPLOSIVE
- [ ] K. REACTIVE
- [ ] L. INCOMPATIBLE
- [ ] M. NOT APPLICABLE

III. WASTE TYPE

CATEGORY	SUBSTANCE NAME	01 GROSS AMOUNT	02 UNIT OF MEASURE	03 COMMENTS
SLU	SLUDGE	Unknown	----	contains Cr-6, in Impoundment
OLW	OILY WASTE			
SOL	SOLVENTS	Unknown	----	Detected in monitoring wells
PSD	PESTICIDES			
OCC	OTHER ORGANIC CHEMICALS			
IOC	INORGANIC CHEMICALS			
ACD	ACIDS			
BAS	BASES			
MES	HEAVY METALS	Unknown	----	Cr-6 in Impoundment

IV. HAZARDOUS SUBSTANCES (See Appendix for most frequently cited CAS Numbers)

01 CATEGORY	02 SUBSTANCE NAME	03 CAS NUMBER	04 STORAGE/DISPOSAL METHOD	05 CONCENTRATION	06 MEASURE OF CONCENTRATION
SLU-MES	Cr-6 in sludge	999	Impoundment	Unknown	
SOL	1,1 dichloroethane, and dichloroethene	999	-----	.01-28	mg/L

V. FEEDSTOCKS (See Appendix for CAS Numbers)

CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER	CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER
FDS			FDS		
FDS			FDS		
FDS			FDS		
FDS			FDS		

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

RCRA Part A application, memo from M. Arnett to M. Smith 12-22-83,
Memo from S. Maxwell to M. Smith 10-24-83,
Phone conversation with M. Smith (GA EPD) 1-11-85
Attachments

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
GA	D061022216

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 [X] A. GROUNDWATER CONTAMINATION — 02 [X] OBSERVED (DATE: 4/30/84) — [ ] POTENTIAL — [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: Unknown — 04 NARRATIVE DESCRIPTION

Monitoring wells on the property are contaminated with methylene chloride dichloroethane and ethene, chromium.
and

01 [ ] B. SURFACE WATER CONTAMINATION — 02 [ ] OBSERVED (DATE: _____) — [ ] POTENTIAL — [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION

01 [ ] C. CONTAMINATION OF AIR — 02 [ ] OBSERVED (DATE: _____) — [ ] POTENTIAL — [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION

01 [ ] D. FIRE/EXPLOSIVE CONDITIONS — 02 [ ] OBSERVED (DATE: _____) — [ ] POTENTIAL — [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION

01 [ ] E. DIRECT CONTACT — 02 [ ] OBSERVED (DATE: _____) — [ ] POTENTIAL — [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION

01 [X] F. CONTAMINATION OF SOIL — 02 [ ] OBSERVED (DATE: _____) — [X] POTENTIAL — [ ] ALLEGED
03 AREA POTENTIALLY AFFECTED: Unknown (Acres) — 04 NARRATIVE DESCRIPTION

Soil in and around the drum storage area. See attachment B.

01 [ ] G. DRINKING WATER CONTAMINATION — 02 [ ] OBSERVED (DATE: _____) — [ ] POTENTIAL — [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION

01 [ ] H. WORKER EXPOSURE/INJURY — 02 [ ] OBSERVED (DATE: _____) — [ ] POTENTIAL — [ ] ALLEGED
03 WORKERS POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION

01 [ ] I. POPULATION EXPOSURE/INJURY — 02 [ ] OBSERVED (DATE: _____) — [ ] POTENTIAL — [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
GA	D061022216

II. HAZARDOUS CONDITIONS AND INCIDENTS *(Continued)*

01 ☐ J. DAMAGE TO FLORA — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ K. DAMAGE TO FAUNA — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION *(Include name(s) of species)*

01 ☐ L. CONTAMINATION OF FOOD CHAIN — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ M. UNSTABLE CONTAINMENT OF WASTES *(Spills/runoff/standing liquids/leaking drums)* — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

01 ☐ N. DAMAGE TO OFFSITE PROPERTY — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ P. ILLEGAL/UNAUTHORIZED DUMPING — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

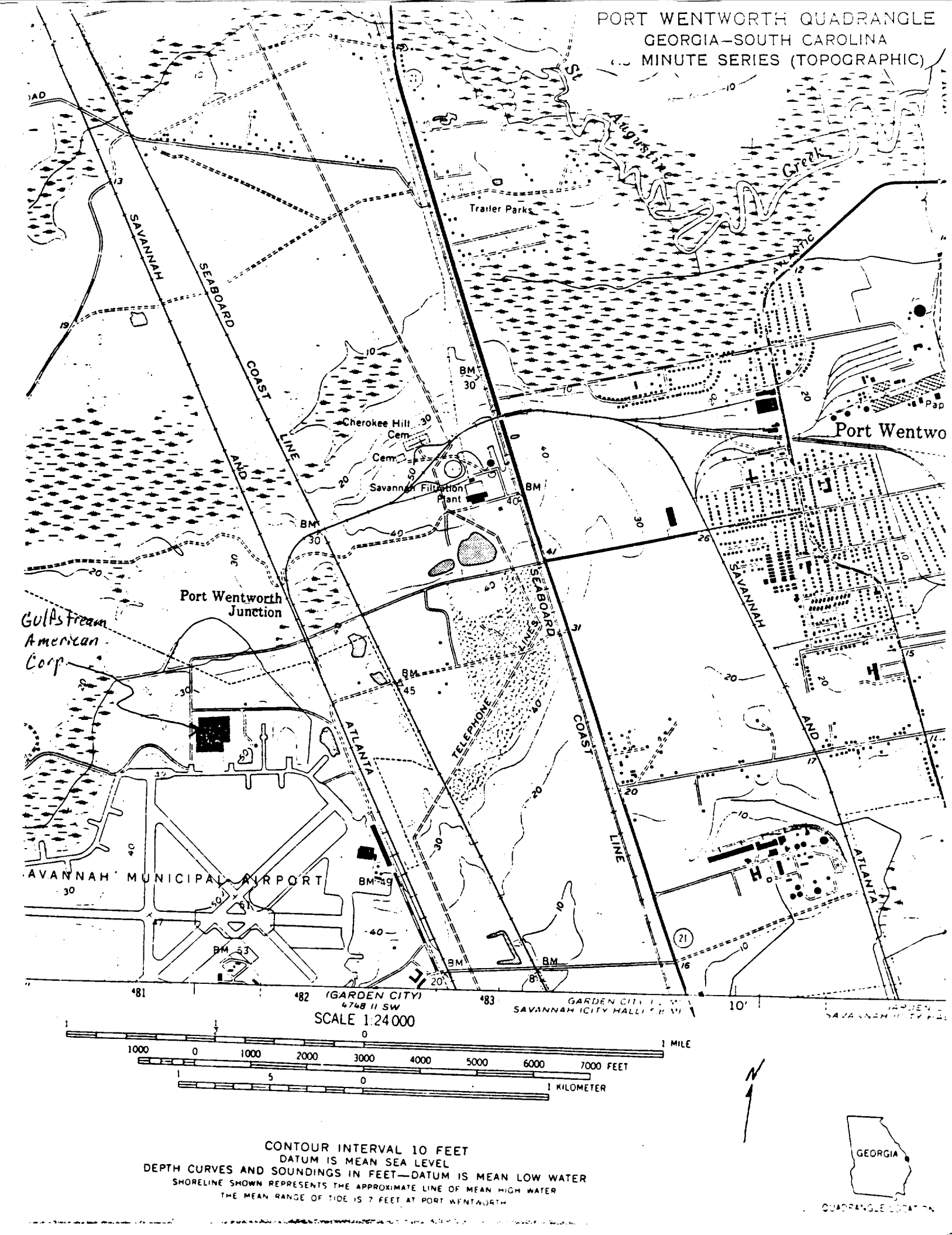
05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

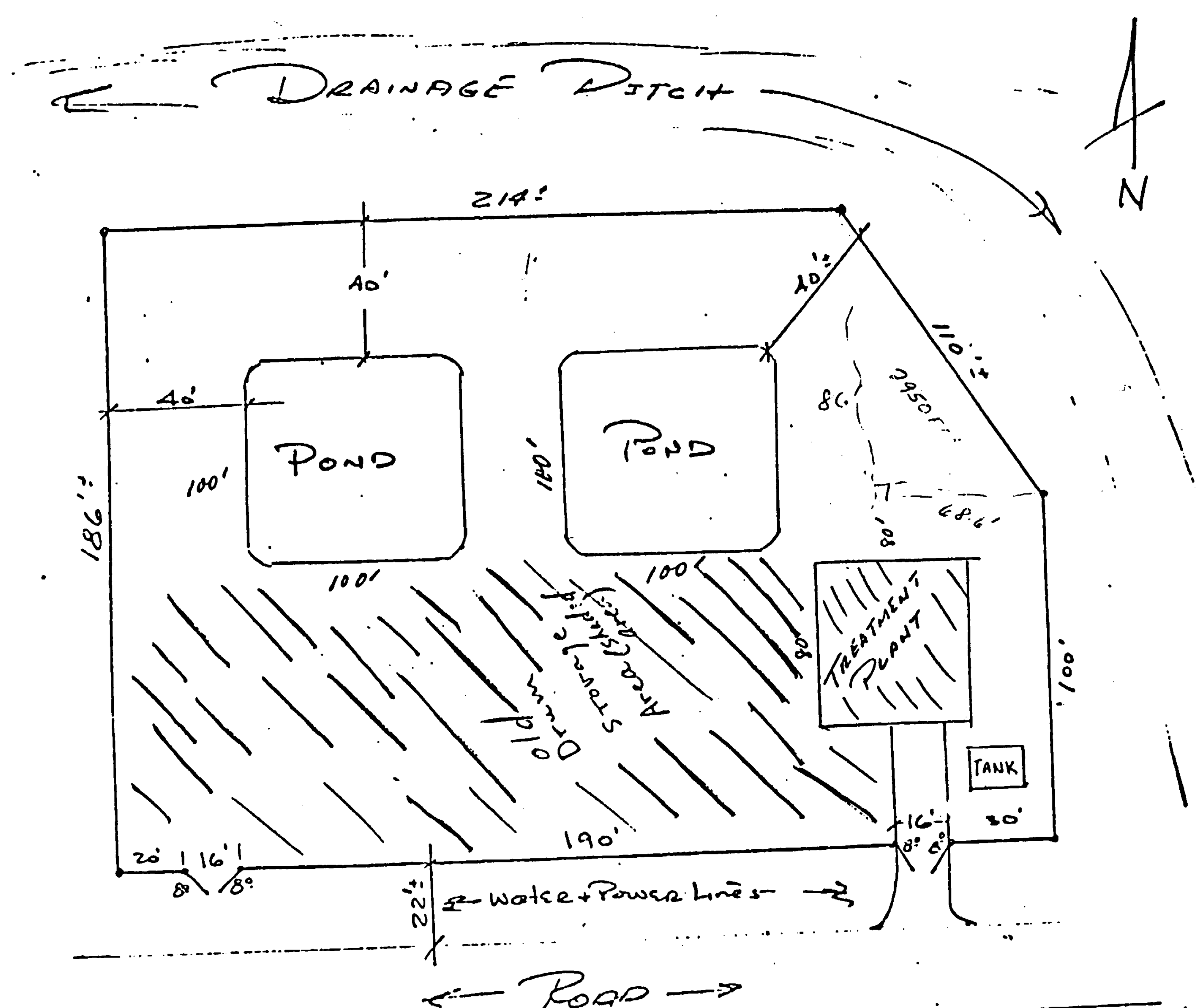
III. TOTAL POPULATION POTENTIALLY AFFECTED: _____

IV. COMMENTS

V. SOURCES OF INFORMATION *(Cite specific references, e.g., state files, sample analysis, reports)*

Groundwater monitoring report (9-21-83) from Gulfstream, phone conversation with Mark Smith (GA EPD) on 1-27-84 and on 1-11-85.


PORT WENTWORTH QUADRANGLE
GEORGIA—SOUTH CAROLINA
7.5 MINUTE SERIES (TOPOGRAPHIC)
St Augustine Creek
Trailer Parks
SAVANNAH AND SEABOARD COAST LINE
Cherokee Hill Cem
Cem
Savannah Filtration Plant
BM
Port Wentworth Junction
Gulfstream American Corp
SEABOARD COAST LINE
TELEPHONE LINE
ATLANTA AND
SAVANNAH MUNICIPAL AIRPORT
(GARDEN CITY)
4748 II SW
SCALE 1:24000
1 MILE
7000 FEET
1 KILOMETER
CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL
DEPTH CURVES AND SOUNDINGS IN FEET—DATUM IS MEAN LOW WATER
SHORELINE SHOWN REPRESENTS THE APPROXIMATE LINE OF MEAN HIGH WATER
THE MEAN RANGE OF TIDE IS 7 FEET AT PORT WENTWORTH
GEORGIA



DRAINAGE DITCH
N
214'
40'
40'
POND
POND
100'
100'
100'
100'
186'
10'
110'
86'
2950 ft²
68.6'
80'
80'
TREATMENT PLANT
TANK
100'
16'
30'
8'
8'
190'
20'
16'
8'
8'
22'
Water + Power Lines
ROAD
Old Drum Storage Area (Asphalted)

FACT SHEET

Gulfstream Aerospace Corporation
Savannah, Georgia

A draft permit has been prepared for the above-referenced hazardous waste facility. This fact sheet has been prepared in accordance with 40 CFR Part 124 in order to briefly advise the public of the principal facts and the significant factual, legal, methodological and policy questions considered in preparing the draft permit.

I. PERMIT PROCESS

The purpose of the permitting process is to afford the Georgia Environmental Protection Division (EPD) and interested citizens the opportunity to evaluate the ability of Gulfstream Aerospace (the Permittee) to comply with the applicable hazardous waste management requirements promulgated under the Georgia Hazardous Waste Management Act. The permit conditions are set forth in one concise permit document which describes all the applicable requirements with which the Permittee must comply for the permit's duration.

II. PERMIT STRUCTURE

The permit is divided into five parts: a cover sheet setting forth the basic legal authority for issuing the permit; a section on standard conditions applicable to all hazardous waste management facilities; a section specifically applicable to storage in containers; a section specifically applicable to post-closure care for surface impoundments; and a section which addresses solid waste management units.

III. FACILITY DESCRIPTION

Gulfstream Aerospace Corporation is an aircraft manufacturing plant. Hazardous wastes are generated in conjunction with the cleaning, painting and surface treating of aircraft parts. Wastes such as solvents and paint stripping solids are stored in containers prior to shipment off-site for disposal. Gulfstream is seeking an operating permit to allow storage of containerized waste for longer than 90 days. Wastewater treatment sludge from chrome conversion coating processes (hazardous waste number F019) was previously stored in two surface impoundments at the facility. While the sludge was removed during closure of the impoundments, contaminated subsoils and groundwater remain at the site necessitating issuance of a permit for post-closure care. The proposed permit specifies a corrective action program for restoring contaminated groundwater to acceptable conditions. Additional provisions have been included in the permit as a result of the 1984 amendments to RCRA. These requirements are included in accordance with Section 12-8-66(e) of the Georgia Hazardous Waste Management Act which addresses corrective action for possible releases of hazardous wastes or hazardous constituents to

the environment. This regulation has been satisfied by the requirement for a RCRA Facility Assessment (RFA) of all solid waste management units and the requirement for the submittal of a corrective action plan for releases from any solid waste management units if the RFA indicates the need for such action.

The hazardous wastes that will be managed at the facility are:

EPA Hazardous Waste Number	Material	Units
D002	Spent paint stripping waste	Container storage
D007	Waste paint from parts and plane painting.	Container storage
F001	Spent halogenated solvent used in degreasing in paint hangar, 1,1,1-trichloroethane	Container storage
F002	Spent halogenated solvent including, 1,1,2-trichloro 1,2,2-trifloroethane Freon TF, methylene chloride	Container storage
F003	Spent non-halogenated solvents-xylene, methyl, isobutyl, ketone, N-butyl alcohol, phenols	Container storage
F005	Spent non-halogenated solvents-toluene, methyl ethyl ketone, isobutanol	Container Storage
F019	Residues from wastewater treatment sludge from chemical conversion coating.	Two closed surface impoundments.

IV. PERMIT CONDITIONS

Following is a list of the major permit conditions and the authority for each condition. Regulatory citations are for the 40 CFR section as in Chapter 391-3-11 of the Georgia Rules for Hazardous Waste Management.

Section I - General Permit Conditions

Subject	Regulation	Permit Condition
Scope and Effect of Permit	§270.4 §270.41 §270.42 §270.43	I.A.
Management Requirements	§270.30	I.B.

Georgia Department of Natural Resources
205 Butler Street, S.E., Floyd Towers East, Atlanta, Georgia 30334
J. Leonard Ledbetter, Commissioner
Harold F. Reheis, Assistant Director
Environmental Protection Division
(404) 656-4713

April 8, 1987

TRIP REPORT

SITE NAME AND LOCATION:..... Gulfstream Aerospace Corporation
Savannah, Georgia

TRIP BY: ..... Rochelle Routman RR

ACCOMPANIED BY: ..... None

DATE OF TRIP: ..... March 18, 1987

OFFICIALS CONTACTED:..... Mr. Bobby Tucker,
Director of Industrial Health & Safety
Mr. Jim Johnson,
Manager, Hazardous Waste Materials
Mr. Richard Catlin,
Richard Catlin & Associates, Inc.

REFERENCE: ..... March 5, 1987 NOD to Mr. Jim Johnson

COMMENTS:

The purpose of this trip was to accomodate Jim Johnson's request that I visit the facility in order to familiarize myself with the general layout of the monitoring well system. Also, Mr. Johnson requested that I discuss the March 5, 1987 notice of deficiency with Richard Catlin.

While reviewing the notice of deficiency with Mr. Catlin, the following items were discussed:

1. The uppermost aquifer will be redefined, considering the confining layer or lower boundary. Mr. Catlin indicated that he would provide adequate data to prove that the Miocene units act (collectively) as a confining layer.

2. The seasonal and temporal effects on the groundwater regime will be addressed. Flow contour maps constructed with seasonal groundwater elevation data will be provided.

3. Cross sections will be revised, so that they show the screened interval and the water level of each monitoring well.

4. A third cross-section will be compiled.

5. The vertical and horizontal components of groundwater flow will be adequately established. Permeability tests will be conducted using formation samples obtained during well installation. In addition, two diagrammatic flow nets will be constructed.

R-140

6. All wells in the study area will be sampled simultaneously. The wells will be sampled before March 31, 1987.

7. Initially, plume delineation will be based on all constituents which have been detected in the groundwater. (See the March 4, 1987 memo to Smith from Routman, Contaminant Plume Description, item 2).

8. Representatives for the facility indicated that additional assessment wells, as prescribed in the March 5, 1987 NOD, would not be installed until the extent of contamination which presently exists is verified.

9. Representatives for the facility have taken the position that chromium and arsenic which have been detected in the groundwater is naturally occurring, and therefore, does not constitute groundwater contamination. The O/O of the facility has requested that dissolved values of these constituents are used for plume delineation.

   Currently, monitoring wells are developed on a weekly basis, by bailing to dryness. Also, wells are bailed to dryness 24 hours before sampling takes place.

10. Representatives for the facility have taken the position that organic constituents in the groundwater have been released from a tank, rather than the regulated unit. This will be demonstrated in the revised Part B application.

    Comments regarding groundwater quality data:

    A. (1). Total chromium values exceeding the drinking water standard have been detected in the following monitoring wells:

    W-1, W-2, W-5, W-6, W-7A, W-7C, W-9, W-12, W-14, and W-14A.

    Samples drawn from the following wells on January 16, 1987 were analyzed for dissolved chromium values:

    W-1, W-5, W-6, W-7, W-7C, W-9, W-12 and W-14.

    Dissolved chromium values which exceeded the drinking water standard were detected at the following wells:

    W-1, W-6, W-7C and W-9.

    (2). Background wells W-11, W-7, W-10 and W08 show less than detectable levels of total chromium, whereas most downgradient wells show higher levels (see attached data sheets).

    B. (1). Total arsenic values exceeding the drinking water standard have been detected at the following wells:

W-1, W-5, W-6, W-9, W-12, W-14 and W-14A.

Samples drawn from the following wells on Jaunary 16, 1987 were analyzed for dissolved arsenic values:

MW-1, MW-5, MW-6, MW-, MW-C, MW-9, MW-12 and MW-14.

Dissolved arsenic values exceeding the drinking water standard were not detected.

C. (1). Organic constituents have been detected in all wells on site, except for W-2, W-3, W-4, W-7B, W-8, W-10 and W-14.

Upgradient well MW-7 has detected relatively high concentrations.

CONCLUSIONS:

a. Because dissolved chromium values have exceeded the drinking water standard in samples drawn from four wells, chromium contamination in the groundwater can not be disputed.

b. Arsenic concentrations in non-filtered samples exceed the drinking water standard, but are below the drinking water standard in filtered samples. Therefore, the verification of arsenic contamination in the groundwater depends on the analytical method which is implemented.

RECOMMENDATION AND FOLLOW-UP REQUIRED:

1. The Georgia EPD must determine which analytical method is permissible for plume definition at this facility.

   If representatives for the facility wish to attempt to demonstrate that dissolved analysis results are most appropriate for plume definition at this site, soil samples from the screened formations at both upgradient and downgradient locations should be provided in order to determine the concentrations of arsenic and chromium which are naturally contained in the soils at the site. Also, additional sampling data, including both total and dissolved values, should be provided by the facility. Presently, only one set of sampling data, in which both filtered and non-filtered samples were analyzed, is available for comparison.

   If it can not be satisfactorily demonstrated that dissolved analysis results are the most appropriate for plume definition at this facility, I recommend that samples be drawn 24 hours after bailing, and that plume delineation is based on total metals values. This approach would be consistent with what this office has required from facilities with similar sampling complications.

2. If representatives for the facility wish to attempt to demonstrate that the organic constituents detected in the groundwater have not been released by the regulated unit, a detailed investigation confirming this theory must be conducted. Considerations such as water quality variations across the site, flow direction, and the location of each release should be addressed. Additionally, the appearance of each specific constituent in the groundwater should be accounted for.

PHOTOGRAPHS:..... none

REVIEWED BY:..... Bill Mundy

SAMPLES:..... none

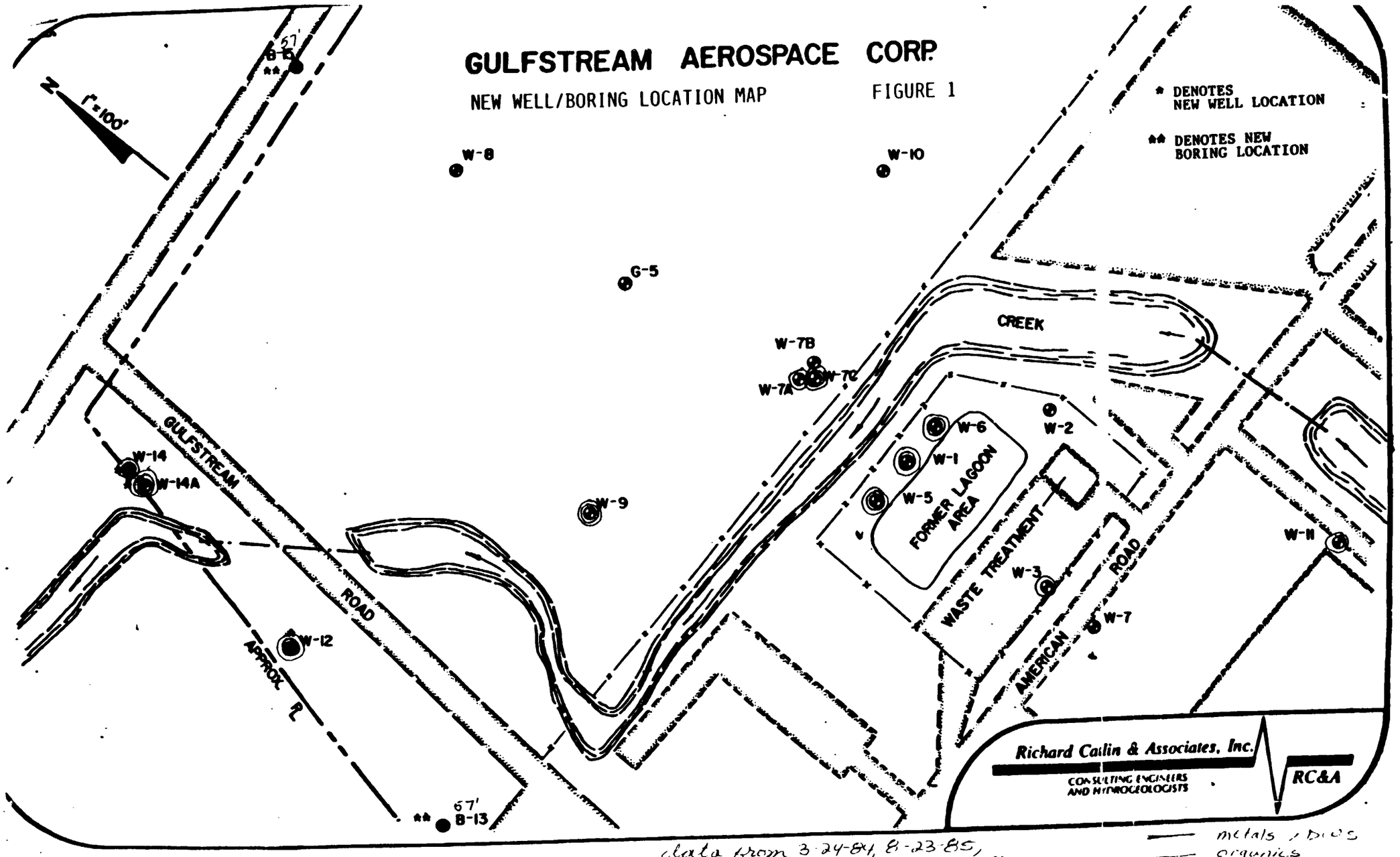
ATTACHMENTS:..... 1. Water quality data sheets
2. Site map

RR:kaw:1129K
File: Gulfstream (R)

GULFSTREAM AEROSPACE CORP.

NEW WELL/BORING LOCATION MAP

FIGURE 1



data from 3-24-84, 8-23-85, 10-17-86, and 1-16-87

PUBLIC NOTICE
NOTICE OF INTENT TO ISSUE PERMIT

The Environmental Protection Division of the Georgia Department of Natural Resources under the authority of the Georgia Hazardous Waste Management Act, O.C.G.A. Section 12-8-60, et. seq., as amended, announces its intent to issue a permit for operation of a hazardous waste container storage area and for post-closure care of two surface impoundments which were closed with hazardous waste residues left in place. The facility is owned and operated by Gulfstream Aerospace Corporation at Savannah Municipal Airport, Travis Field, Savannah, Georgia. The Facility Identification Number for Gulfstream is GAD061022216.

Gulfstream Aerospace Corporation is an aircraft manufacturing plant. In conjunction with the stripping, cleaning, and painting of aircraft parts, hazardous liquid and solid wastes are generated which are stored in containers prior to shipment off-site for disposal. The facility also generates wastewater treatment sludge from chrome conversion coating. This sludge was formerly stored in two surface impoundments at the site. Although the sludge has been removed from the impoundments, contaminated subsoils and groundwater remained after excavation, necessitating closure of the units as a landfill. The proposed permit for this facility specifies conditions for operating the container storage area, maintaining the closed impoundments, and conducting corrective action to restore groundwater to acceptable conditions. No additional disposal of wastes will be allowed by the proposed permit. The draft permit has been prepared in accordance with the provisions of the Georgia Rules for Hazardous Waste Management, Chapter 391-3-11.

The State of Georgia received final authorization for the 1984 amendments to the Resource Conservation and Recovery Act (RCRA), as amended, on September 18, 1986. Therefore, upon issuance, this permit will constitute a full RCRA permit as required by the Georgia Hazardous Waste Management Act and RCRA.

Before making its final decision to issue or deny the permit, Section 391-3-11-.01 (40 CFR 124.10) of the Rules requires the EPD to provide an opportunity for public comment. Accordingly, a public comment period has been arranged from August 7, 1987 to September 21, 1987. During the public comment period, copies of the draft permit and supporting documents will be available for public review at the following locations during regular business hours:

Georgia Environmental Protection Division
Hazardous Waste Management Program
205 Butler Street, S.E.
1154 Floyd Towers East
Atlanta, Georgia 30334
(404) 656-7802
Monday - Friday 8:30 a.m. - 4:00 p.m.

Chatham County Public Library
Reference Department
2002 Bull Street
Savannah, Georgia 31499-4301

Salt-Water Encroachment Geology and Ground-Water Resources of Savannah Area Georgia and South Carolina

By HARLAN B. COUNTS and ELLIS DONSKY

GEOLOGICAL SURVEY WATER-SUPPLY PAPER 1611

Prepared in cooperation with the Georgia Department of Mines, Mining and Geology, the city of Savannah, and Chatham County, Georgia

UNITED STATES GOVERNMENT PRINTING OFFICE, WASHINGTON : 1963

The amount and quality of the water available in any Recent deposit is dependent on local conditions. Moderately large supplies of usable water may be available from the thick gravel and sand deposits along river flood plains and from deposits in limestone solution cavities. Near the ocean and along the tidal estuaries fresh water is difficult to find in shallow deposits because of included and infiltrating salt and brackish water.

SURFACE WATER

The Savannah River rises in the Appalachian Mountains and collects water from a number of Piedmont tributaries to become a major river. At the gaging station nearest its mouth, near Clyo, Ga., the Savannah River has a drainage area of 9,850 square miles and had an average flow of 7,220 mgd (million gallons per day) for the years 1930–33 and 1938–58 (U.S. Geological Survey, 1960a). The daily minimum flow during these years was 1,260 mgd in September 1931. The minimum flow required to maintain the new 9-foot navigation channel from Savannah to Augusta, about 125 miles upstream from Savannah, is 5,800 cfs (cubic feet per second) or 3,740 mgd. The flow is now regulated to maintain this necessary minimum by power operations and reservoirs near and above Augusta.

The Ogeechee River, a much smaller river than the Savannah, rises in the Piedmont province. At the gaging station near Eden, Ga., the Ogeechee River has a drainage area of 2,650 sq mi and had an average discharge of 1,357 mgd for the years 1938–58 (U.S. Geological Survey 1960b). The daily minimum flow during these years was 85 mgd in September 1954.

The quality of water from the Savannah and Ogeechee Rivers is similar. The dissolved solids average less than 60 ppm (parts per million), and the hardness averages less than 25 ppm (Thomson and others, 1956).

The Savannah Industrial and Domestic Water Supply System supplies treated river water to parts of Savannah. The surface supply augments the ground water from the principal artesian aquifer and supplies industries with a softer water than is available from the principal artesian aquifer. The system takes surface water from Abercorn Creek about 2½ miles above its junction with the Savannah River. Water from the Savannah River flows in and out of Abercorn Creek with the tidal cycle; thus it is Savannah River water that is obtained most of the time. The intake for the filter plant is about 13 miles north of Savannah City Hall. River water is pumped to the filtration plant located at Cherokee Hill, about 7 miles northwest of the Savannah City Hall, where it is filtered and chlorinated and where lime is added for adjustment of pH before it is pumped into the distribution system. The hardness of the river water averages about 20 ppm and that of the treated water about 34 ppm.

The surface supply system was put in service in May 1948 and treated an average of 11 mgd of river water during the last 7 months of that year. By 1954 peak daily loads were approaching 40 mgd, the original capacity of the plant. The 1954 to 1957 use of treated surface water from this plant averaged about 24 mgd. A 10 mgd addition completed in 1958 makes the total capacity 50 mgd. In 1958 industries used an average of about 25 mgd of treated river water, an amount equal to almost half the ground water used in 1958. Small amounts are used by the city of Savannah when a pump or motor fails or when a well is being repaired. Figure 3 shows the use of treated river water since the plant was put in operation.

The industries and power plants along the Savannah River use more than 200 mgd of untreated river water. This water is withdrawn from the river at plant locations and used largely for cooling of condensers. It is also used for rough washing, flushing of sewers, and emergency fire protection. The quality of the river water, especially its sodium chloride content, varies considerably and is dependent on the discharge of the river, tidal conditions, location of plant, and the depth of the intake pipe. With the deepening and enlargement of the ship channel connecting the port of Savannah with the Atlantic Ocean, waters of high chloride content have advanced farther upstream. In 1959, river water with a chloride content of less than 100 ppm could be obtained at all times south of the costal highway crossing at Port Wentworth.

The total use of treated and untreated surface water in 1958 was more than 225 mgd, which is about 3 times more than the 68 mgd of artesian ground water used in 1958.

GROUND WATER

The principal water-bearing formations in the Savannah area are the limestone sections of the Eocene, Aligocene, and Miocene deposits. These limestone deposits are known collectively as the principal artesian aquifer, and about 98 percent of the ground water used in the area is from this aquifer. The balance of the ground water comes from deposits of Miocene to Recent age. The following sections are concerned mostly with water in the principal artesian aquifer.

Locally, finely disseminated phosphate grains and thin stringers of mottled micaceous clay occur within the Wicomico.

The Wicomico formation is water bearing in places, although little is known about the amount and quality of the water.

PAMLICO FORMATION

The Pamlico formation covers more of the Savannah area than any other formation of Quaternary age. The terrace on which the Pamlico is deposited occupies a belt 20 to 30 miles wide along the coast of Georgia and South Carolina, and the shoreline reached an elevation of approximately 30 feet above mean sea level.

The Pamlico terrace, the Pamlico beach scarp, and the lower part of the Wicomico terrace probably are best seen on the road northeast of Hinesville, Ga.

The formation consists chiefly of sand and clay, and the maximum thickness probably does not exceed 60 feet. The section, as reported by Cooke (1936, p. 150) from 11 wells in Beaufort County, S.C., consists of 10 to 30 feet of dark-gray to blue sandy clay overlain by 20 to 32 feet of yellow, gray, and white fine- to coarse-grained sand. In the rest of the Savannah area the white sand usually interfingers with the dark-gray to blue sandy clay, rather than the two occurring separately as in Beaufort County, S.C. The average thickness of the Pamlico formation is about 15 feet.

In Catham County, Ga., on the sites of Travis Airport and Hunter Air Force Base, remnants of the Pamlico formation include offshore islands or possibly barrier beaches. A large part of the city of Savannah, because of its altitude, also may be situated on a remnant of an island or barrier beach formed during Pamlico time, although good exposures of sand are not available for examination in the city.

The formation is composed of typical beach deposits consisting of very fine- to fine-grained white quartz sand which is well sorted and subrounded. At an approximate altitude of 30 feet above mean sea level the character of the sand changes from very fine to mostly coarse yellow quartz sand. The sand grains range from angular to subrounded and are poorly sorted; the units show some crossbedding.

Most shallow wells probably draw water from the Pamlico formation, in which water is under water-table conditons. Good quality water may be obtained from shallow wells provided necessary measures are taken to avoid contamination. The few analyses of water from the Pamlico formation show it to be soft, and at some places, high in iron content.

SILVER BLUFF (?) FORMATION

The Silver Bluff formation of local usage is represented by sediment deposited on the Silver Bluff terrace. The shoreline of this terrace is represented by a wave-cut bench at about 5 feet above sea level. In southeastern Florida, the Silver Bluff shoreline and terrace can be easily seen. Farther north and in the Savannah area this shoreline is less apparent. The paucity of consolidated rocks along most of the Atlantic Coast prevents the feature of this latest Pleistocene shoreline from being more widely preserved. An indistinct wave-cut bench at about 5 feet above sea level occurs on the seaward side of Ossabaw, Wassaw, Daufuskie, and Hilton Head Islands in Georgia and South Carolina.

In the Savannah area the Silver Bluff(?) formation consists of silty carboneaceous gray to brown sand of the island ridges and sticky gray muck or gumbo of the intercoastal tidal flats and salt marsh savannahs. The Silver Bluff(?) formation, which lies on the Silver Bluff terrace consists of silty carboneacous sand in the Savannah area. The color of the sand varies as does the clay content, grain size, sorting, and roundness.

Local conditions determine the amount and quality of the water available to wells from the Silver Bluff(?) formation. On some of the island ridges, which are as much as 8 to 15 feet above sea level, the cleaner sand deposits may yield small supplies of ground water, the quality of which is unknown. The sticky muck or gumbo is not an aquifer.

RECENT SERIES

The Recent series postdates and is unrelated to the marine terraces or their related formations.

RECENT FORMATIONS

The Recent formations include gravel, sand, silt, mud, and clay deposited on the flood plains of rivers, in sinkholes, lakes, swamps, on beaches, and in the brackish marshland along the coast. Deposition of sediment at the present time varies according to the kind of material available and local topographic features.

Rivers have periodically inundated their valleys, spreading moderately thick deposits of sand and gravel over the flood plains. Streams have been filling their estuaries with sand and mud, converting them into tidal marshes. The drainage in these marshes has been retarded by the accumulation of silt and the growth of plant life.

Windblown and wave-washed sands have been added to the beaches and islands raising the Recent deposits above water level.

to grade upward into sand of Pliocene age. However, where the Waccamaw(?) is exposed, it appears to be overlain unconformably by a dark-blue-gray silty sand of probable Pleistocene (Pamlico) age.

Character, distribution, and thickness.—In the Savannah area, the Waccamaw(?) formation in the subsurface consists of red and yellow sand. Probable exposures of Waccamaw(?) occur at extreme low tide at the north ends of Hilton Head Island, S.C., and Ossabaw Island, Ga., along the Inter-Coastal Waterway. Here, 1 to 3 feet of indurated red and yellowish-brown argillaceous sand is interbedded with discontinuous thin layers of shells and polished phosphatic pebbles.

The Waccamaw(?) formation is encountered in the subsurface in the Savannah area in a belt 40 to 50 miles wide parallel to the coast. The farthest inland occurrence is in well BUL–75. This shows the landward extent of the Waccamaw(?) sediments, and indicates that the rise of the Pliocene sea probably was not more than 100 feet above present sea level.

In the Savannah area, the Waccamaw(?) formation probably is nowhere more than 15 feet thick, although Cooke (1936, p. 124) and Siple (1959, p. 11) indicated respectively that it was as much as 25 and 35 feet thick in South Carolina.

Water-bearing properties.—The Waccamaw(?) formation, although apparently present over much of the Savannah area, generally is thin and is not a source of water except for small domestic supplies.

Siple (1946, p. 56) reports four municipal wells tapping the Waccamaw formation in South Carolina. The average yield for the four wells was 51 gpm, from a maximum of 132 to a minimum of 20 gpm. The composition of the Waccamaw(?) formation in the Savannah area indicates that it may yield water that is high in iron, sulfate, and nitrate; the water is probably moderately hard where where the formation is marly but generally soft where it is sandy.

QUATERNARY SYSTEM

Ample evidence exists of repeated advances and retreats of glaciers during the Pleistocene epoch. Although the great ice sheets of Quaternary age did not reach Georgia or South Carolina, their influence is seen today in the Coastal Plain as a series of terraces, each at a lower elevation seaward. These were deposited or cut when the sea stood at different levels in response to the effects of climatic changes. The formations cannot be dated accurately because diagnostic faunal evidence is lacking, but in general the available evidence indicates a Pleistocene age for these deposits.

PLEISTOCENE SERIES—LOWER MARINE TERRACES

At least four ancient shorelines exist in the Savannah area. Topographic maps indicate the most apparent shorelines were at 150, 100, 30 and 10 feet, but they were not mapped. These shorelines are correlated with those described by MacNeil (1950, p. 99) as the peaks of marine transgression. The marine terrace deposits represent deposition between two successive stands (shorelines) of the sea. The oldest terrace deposits are the highest; in order of decreasing altitude above sea level and decreasing age, the terrace deposits comprise the Okefenokee, Wicomico, Pamlico, and Silver Bluff(?) (of local usage) formations.

OKEFENOKEE FORMATION

The Okefenokee formation, oldest and highest of the terraces, (MacNeil 1950, p. 101) is confined to the northwestern third of Effingham County and the southeastern part of Bulloch County. The formation consists of as much as 50 feet of fine- to coarse-grained, angular, white to rust-colored arkosic sand interbedded with sandy clay. The clay is mottled red, white, and purple and interbedded with thin stringers of gravel containing pyrite.

The water-bearing properties of the Okefenokee formation are not known, but it yields sufficient water for rural purposes to many shallow dug and drilled wells. The quality of the water is not known, but the color of the formation suggests that the water probably is soft and has a high iron content. Small supplies probably are available wherever this formation underlies the surface.

WICOMICO FORMATION

The Wicomico formation occurs in the Savannah area in patches and narrow ridges between altitudes of 70 and 100 feet bordering the eastern edge of the Okefenokee formation. It is less sharply defined than other terrace deposits, and MacNeil (1950, p. 102) suggests that the sea stood for only a comparatively short time at the level at which this formation was formed. Marine and coastal features such as offshore bars, beach scarps, and sand dunes are fairly well developed along a belt extending from north of Jasper County, S.C., to south of Liberty County, Ga.

The Wicomico formation probably is thin; 30-foot intervals of sand were penetrated in at least three wells, and as much as 13 feet of sand along river banks and flood plains is regarded as Wicomico formation. Elsewhere the Wicomico formation, or remnants of it, occurs as a thin veneer covering the Wicomico terrace.

The formation consists of fine- to medium-grained sand. It is white to gray with streaks of rust-colored, indurated, coarse sand.

subsurface in the Savannah area is the thick section of green silt and clay.

The thickest sequence of Hawthorn formation was recorded from the well TAT–11 west of Reidsville, Tattnall County, Ga. In this well 420 feet (35–455 ft) of yellowish-green sandy, silty clay was observed. The clay was interbedded with tongues of gray phosphatic sand, white to pink saccharoidal sand, and white dense sandy limestone.

Near Brooklet in Bulloch County, Ga., the Hawthorn is mostly fine- to coarse-grained sand with green silt and clay. Lenses and tongues of sandy limestone and streaks of dolomitic limestone are also present. The eastern facies of the Hawthorn becomes more silty, retaining the green color with many sequences of blocky sandy clay and tongues of dolomitic limestone. The formation is more calcareous from south to north.

In South Carolina the Hawthorn generally is less than 100 feet thick and in well HAM–30 it is absent. Post-Hawthorn seas, moving inland from the east, eroded the Hawthorn, making it thinner in the eastern part of the Savannah area.

Water-bearing properties.—The water-bearing properties of the Hawthorn formation cannot be summarized simply. The water generally is safe to use and hundreds of wells draw water from this formation, although the yields are small because of low permeabilities and poor recharge. However in certain locations thick sand zones are screened and developed to yield moderately large volumes of water. Elsewhere thick lenses or tongues of limestone yield water to open-casing wells.

The quality of the water varies locally; the most noticeable property of the water from the formation is the odor of hydrogen sulfide gas.

The Hawthorn is important as part of the upper confining layer. Its thickness and low permeability help to prevent the leakage of water from the surface into the principal artesian aquifer. Near the coast, changes in regional dip bring the aquifer close to the surface, and tidal currents have scoured deep holes into the Hawthorn in some of the estuaries. The thickness of the confining layer has been reduced and salt and brackish water probably leak through the Hawthorn into the principal artesian aquifer. Before the piezometric head was lowered to below sea level, artesian ground water probably discharged as submarine springs into the estuaries through the thin spots. Now a reverse effect is occurring—these same openings or thinly covered parts of the formation are points of recharge for salt and brackish water.

DUPLIN MARL

The Duplin marl of late Miocene age lies unconformably on the Hawthorn formation except where the Hawthorn is absent, as in well HAM–30, and the Duplin marl rests unconformably on the Tampa limestone. The Duplin is unconformably overlain by sediments of Pliocene(?) to Recent age.

Character, distribution, and thickness.—The Duplin marl consists of tan to light-brown marl, some shells and clay. Exposures of Duplin marl in bluffs on the Savannah River were described by Veatch and Stephenson (1911, p. 372). It is sandy where exposed and less sandy in the subsurface.

The Duplin marl generally is less than 50 feet thick in surface exposures in South Carolina. It is 5 to 15 feet thick in Georgia where it is exposed, and its thickness is about 20 feet or less in the subsurface of the Savannah area. The Duplin has been identified in well cuttings from a few wells in the vicinity of the Savannah River.

Water-bearing properties.—The Duplin yields small amounts of reportedly hard water. The hardness probably is due to the large amount of finely disseminated calcareous material in the sand. The only municipal well obtaining water from the Duplin marl is in Sumter County, S.C., and reportedly yields 25 gpm. Over most of the area, the Duplin marl probably functions as part of the upper confining layer of the principal artesian aquifer rather than as an aquifer.

PLIOCENE (?) SERIES

The presence of Pliocene deposits in the Savannah area is questionable. Although the striking similarity between the Waccamaw formation in the Carolinas and similar thin discontinuous deposits in the Savannah area suggests a close association between the two, the evidence is far from conclusive and the lack of diagnostic fauna precludes a definite age determination. Deposits of possible Pliocene age have been included with Pleistocene and Recent deposits on the fence diagram (pl. 2).

WACCAMAW (?) FORMATION

In the Savannah area, the Waccamaw(?) formation is identified definitely only in the subsurface. The sharp change in lithology between the green silt, clay, and marl of the Hawthorn and the red and yellow sand of the Waccamaw(?) suggests an unconformity at the base of the Waccamaw(?), although the fossil assemblage is of both late Miocene and Miocene and Pliocene ages. The upper boundary of the Waccamaw cannot be differentiated readily in the subsurface, especially where the Waccamaw(?) sand appears

boundary between the two formations. Prominent and consistent "kicks" on the electric logs have been selected as indicating a change in depositional environment or perhaps a time break of moderate duration; the zone of these "kicks" has been used to separate the Tampa and Hawthorn. The Duplin marl consists of a few remnants which lie unconformably on the Hawthorn formation in the northwestern part of the area.

TAMPA LIMESTONE

The Tampa limestone unconformably overlies rocks of the Oligocene series in the Savannah area. It is overlain by the Hawthorn formation, which is similar in composition to the upper part of the Tampa in exposures and in the subsurface of the Savannah area. The Tampa is not recognized in South Carolina in surface exposures, but in this report it is recognized in well cuttings from the subsurface.

Character, distribution, and thickness.—The base of the Tampa limestone is the most easily identified zone of the formation. It is a zone of black and gray shell fragments, dark red to brown phosphatic pebbles, frosted quartz pebbles, coarse sand, and pebble-sized fragments of indurated, dark-green to olive argillaceous silt. This unit also contains small fragments of consolidated limestone which appear to have been redeposited. This part of the Tampa grades laterally into sand or clay facies with the shell fragments and phosphatic pebbles persisting. The basal unit is about 5 to 15 feet thick in the Savannah area; the thickness generally is proportional to the overall thickness of the formation. To the northwest the remainder of the Tampa consists of a thick section of yellowish-green arkosic, calcareous, argillaceous sand overlain by a buff sandy weathered dolomitic limestone.

To the south the sand thins out leaving the dolomitic limestone interbeded with tongues and stringers of soft, pale-green to buff marl or silty limestone. This same lithology can be traced eastward. The eastern facies of the dolomitic limestone thins progressively northward and becomes similar to the Hawthorn formation. In well PI-2 from 40 to 90 feet of materials is reported to be Hawthorn, and the Tampa is thought to be nonexistent although cuttings from a well about 5 miles north of well PI-2 are reported as equivalent to basal Miocene.

The Tampa underlies most of the Savannah area and has a maximum thickness of about 130 feet.

Water-bearing properties.—The lower part of the Tampa limestone apparently is connected hydraulically to the other formations which make up the principal artesian aquifer. Because the fragments in the lower part of the Tampa are relatively large as much as 200 gpm may be available to wells from this thin zone.

One drawback to the sole use of the Tampa as an aquifer is the noticeably high content of hydrogen sulfide (H_2S), which imparts the odor of rotten eggs to the water. Numerous wells on Hilton Head Island draw water from the Tampa limestone and the underlying Oligocene strata. In the shallow wells, with only 3 or 4 lengths of casing (63 to 84 ft), there is a noticeable odor of hydrogen sulfide. A few wells with casing set deeper have less hydrogen sulfide. The hydrogen sulfide appears to be confined to the upper part of the Tampa which is a silty limestone or marl and probably has a low permeability. The origin of the hydrogen sulfide in the water is not known, but the low permeability of the rock probably prevented the water with the hydrogen sulfide gas from being completely flushed out of the formation.

Many domestic wells in the Savannah area yield water from the Tampa limestone and the amount of water obtained is sufficient for most needs.

The low permeability of the upper, thicker part of Tampa limestone indicates that it may actually be part of the upper confining layer. This is especially true in locations where the dominant lithology consists of large amounts of silt and clay and is similar to the Hawthorn.

HAWTHORN FORMATION

In Georgia the name Hawthorn formation is applied to a widespread formation of diverse lithology. The formation is exposed in the northwestern Savannah area along the Savannah River in the bluffs on the Georgia side from north of Hudsons Ferry, Screven County to Ebenezer Landing, Effingham County. Cooke (1936, p. 105–114 and 1943, p. 91–95) described many of the more significant exposures along the Savannah River and at other places in South Carolina and Georgia. In other parts of the area it is found in the subsurface.

In the Savannah area the Hawthorn formation lies conformably on the Tampa limestone. In some places it may merge with and be contemporeanous with the Tampa limestone. Elsewhere it overlies the Tampa and lies unconformably on rocks of Oligocene and late Eocene age. The Duplin marl of Miocene age, where present in the Savannah area, unconformably overlies the Hawthorn. Elsewhere the Hawthorn is unconformably overlain by sediments of Pleistocene and Recent age.

Character, distribution, and thickness.—The Hawthorn formation consists of many different lithologies, none of which are characteristic of the formation as a whole. The most obvious lithology in the

boundary between the two formations. Prominent and consistent "kicks" on the electric logs have been selected as indicating a change in depositional environment or perhaps a time break of moderate duration; the zone of these "kicks" has been used to separate the Tampa and Hawthorn. The Duplin marl consists of a few remnants which lie unconformably on the Hawthorn formation in the northwestern part of the area.

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Character, distribution, and thickness.—The Hawthorn formation consists of many different lithologies, none of which are characteristic of the formation as a whole. The most obvious lithology in the

and are apparently somewhat compacted. These dense limestone zones contain numerous solution channels, and although the solid limestone may have a very low permeability, a small solution channel may increase the permeability greatly. (See table 4, well BFT–304, 186–196 ft.) In parts of the area, especially to the south, water-well drillers have reported relatively thick intervals of very hard rock and large cavities. One driller reported that in one well 6 feet of very hard limestone was penetrated, that the drill stem dropped the next 4 feet through a cavity, and that finally another 4 feet of very hard limestone was drilled. Although these conditions are not widespread they do indicate changing geologic conditions which may affect the water supply in the aquifer. In table 3, the two relatively high coefficients of transmissibility (450,000 and 780,000) were obtained as the result of pumping tests in the southern part of the area (Richmond Hill and Fort Stewart). These values were calculated for the entire principal artesian aquifer at those locations. However, it is quite possible that cavernous limestone, with extremely high permeabilities in a small interval, was the cause of the high transmissibilities.

Water-bearing properties.—The Ocala limestone has been known as a source of large supplies of water for many years. The extent of the formation, the amount of yield, and quality of the water are so well known that the Ocala itself has been referred to erroneously as the principal artesian aquifer. In some parts of the Coastal Plain, especially in the southern part of the Savannah and beyond, the Ocala may very well represent the entire principal artesian aquifer. Both the overlying and underlying formations are either altered to a dolomitic limestone or represented by relatively thin water-bearing rocks. The Ocala in Liberty County is thicker than the entire aquifer in some parts of Chatham County.

The quality of water obtained from the Ocala is excellent for most needs. The chemical constituents are within allowable limits although the water is moderately hard (60–120 ppm) and may need some treatment for commercial or industrial purposes. Yields of 2,000 to 3,000 gpm are common from wells utilizing only the Ocala limestone.

OLIGOCENE SERIES

Rocks intermediate in age between the Eocene series below and the Miocene series above have been assigned to the Oligocene series. In the Savannah area the rocks of the Oligocene series are undifferentiated because insufficient evidence exists to attach a formational name to any of the Oligocene deposits.

The undifferentiated Oligocene strata unconformably overlie the Ocala limestone in most of the area. Where successively younger parts of the Ocala are missing, the rocks of Oligocene age have been deposited unconformably on the truncated surfaces of older upper Eocene and middle Eocene rocks. The Oligocene series in turn is unconformably overlain by various facies of rocks equivalent in age to the Tampa limestone, and where the Tampa is overlapped, by sediments of the Hawthorn formation.

The Oligocene rocks are not exposed in the Savannah area, but crop out in the southwest and central parts of Georgia, and near Charleston, S.C.

Character, distribution, and thickness.—Distribution of wells indicates that rocks of Oligocene age underlie the Savannah area except in the northernmost part. No Oligocene was found in well HAM–30, either because of lack of deposition or removal by erosion. Where present, the Oligocene consists of a lower unit of cream-colored, dense, saccharoidal, fossiliferous limestone and an upper unit of loosely consolidated, gray to buff, chalky, nodular limestone. A unit of sand containing lenses and tongues of dense, sandy limestone is present in the northwestern part of the area.

The rocks of the Oligocene series, where present in the Savannah area, average about 25 to 50 feet in thickness. In the northwestern part of the area, however, the Oligocene is from about 100 to more than 200 feet thick. The maximum thickness is not known because the two wells showing the greatest thickness (wells EFF–47, and BUL–75, pl. 2) did not fully penetrate the Oligocene. The northwest thickening probably is the result of less erosion in that direction before the deposition of the Miocene.

Water-bearing properties.—The Oligocene strata in the Savannah area are water bearing and constitute part of the principal artesian aquifer. Yields of as much as 500 gpm have been reported for wells ending in the Oligocene, and the drawdowns ranged from 1 to 4 feet per 100 gpm.

The quality of the water from Oligocene strata is suitable for most needs. The water is only moderately hard but may require minor softening for large-scale commercial or industrial operations.

MIOCENE SERIES

The Miocene series, as interpreted in this report, includes three formations: the Tampa limestone and the Hawthorn formation of early Miocene age and the Duplin marl of late Miocene age. The Tampa and Hawthorn not only appear to be conformable with one another but seem to merge in parts of the Savannah area. Although lithologically similar, there is no faunal evidence to delineate the

face. The Lisbon formation of Claiborne age lies conformably beneath the Gosport. In most parts of the Savannah area, the Gosport is conformably overlain by the Ocala limestone of Jackson age; where the Ocala is missing the Gosport is overlain unconformably by rocks of Oligocene age and younger.

Character, distribution, and thickness.—The Gosport sand is predominantly sand only in some updip surface and subsurface locations. In some of the deep wells in the Savannah area, the Gosport sand is composed of cream-colored and white to gray dense sandy fossiliferous limestone and pale-green coarsely glauconitic marl.

The extent and thickness of the Gosport in the Savannah area are shown on plate 2. It is not shown in well LIB–185, although it may be included in the bottom 240 feet of the Ocala limestone of late Eocene age. Approximately 400 feet (80–480 ft), the thickest section of Gosport recorded in the area thus far, was penetrated in well HAM–30.

Water-bearing properties.—In general, the Gosport is water bearing and the quality of water is good for most needs. In the northern and northwestern parts of the area the Gosport sand is as shallow as are the Ocala limestone and the undifferentiated Oligocene series limestone, the upper parts of the principal artesian aquifer, farther south.

ROCKS OF JACKSON AGE

In the Savannah area, and wherever present in the Coastal Plain of Georgia and South Carolina, the Jackson represents strata of late Eocene age. The Jackson formation from east Texas to the Tombigbee River in southwest Alabama is equivalent to the Ocala limestone. Eastward in Alabama and in western Georgia the deposits of Jackson age are represented by the Ocala limestone. Farther east in Georgia and in western South Carolina they are represented by the Barnwell formation in surface exposures; in easternmost Georgia and in South Carolina (Savannah area) they are represented by the Ocala limestone only in the subsurface.

OCALA LIMESTONE

The Ocala limestone is one of a number of water-bearing limestones which collectively constitute the principal artesian aquifer of the Coastal Plain in Georgia and part of South Carolina (Warren, 1944a, p. 17). For this report the Ocala is defined as a limestone of late Eocene age overlying the Gosport sand and undifferentiated Claiborne unit of middle Eocene age and unconformably underlying undifferentiated limestone of Oligocene age or in some places, strata of Miocene age.

A few good exposures of the Ocala limestone occur in the main valleys of the Chattahoochee, Flint, and Ocmulgee Rivers. Where beds equivalent to the Ocala are exposed or lie at shallow depths they are called the Barnwell formation in Georgia and the Barnwell sand in South Carolina (Cooke, 1936 and 1943; LaMoreaux, 1946; LeGrand and Furcron, 1956). The Barnwell beds are exposed over large parts of the Coastal Plain and form the area of recharge for its subsurface equivalent—the Ocala limestone.

Character, distribution, and thickness.—The Ocala limestone is divided into a lower unit and an upper unit in the Savannah area. For this report the division of the Ocala is based mostly on hydrologic properties and electric log correlations; the division is not formally related to that used in other areas. (See MacNeil, 1947b.)

The lower part of the Ocala in the Savannah area is predominantly a buff granular calcitized limestone. It is fossiliferous throughout and contains thin layers or stringers of dense, pale-blue limestone and sandy, silty, argillaceous limestone, or marl. It is glauconitic in the lower part and is somewhat similar to and, except for faunal assemblages, often mistaken for the Gosport sand. The lower unit is more widespread and thicker than the upper unit. Except in the northernmost part of the Savannah area where the entire Ocala limestone is absent, the lower part of the Ocala is 170 to 280 feet thick. The average thickness, based on eight well logs, is about 230 feet. In updip subsurface locations the Ocala is represented only by the lower unit. In the fence diagram, plate 2, the Ocala is not differentiated west of well CHA–452 in Chatham County, but it is thought to consist mostly of the lower unit because it resembles it lithologically. In well HAM–30 the Ocala is not present either because of erosion or lack of deposition. The average thickness of the Ocala (lower unit) in outcrops is much less than subsurface occurrences, but the formation is fairly persistent.

The upper unit is thinner and more limited in areal extent than the lower unit. In 7 wells in the Savannah area the upper unit is 80 to 155 feet thick. The average thickness is about 100 feet.

Because of its stratigraphic position and its proximity to a metropolitan area the upper unit has been penetrated more often than the lower unit and more information is available about its lithology.

The upper unit consists of white to gray limestone; it is somewhat calcitized, crystalline, and abundantly fossiliferous. Certain zones in this part of the formation consist almost entirely of bryozoan remains, echinoid spines, sponge spicules, and foraminifers. In contrast, there are thin (1 or 2 ft) zones of very dense limestone consisting of macroshells and fragments which have been cemented

and where they are absent, it overlies rocks of Paleocene age. The Tallahatta is in turn overlain by the Lisbon formation of middle Eocene age.

Character, distribution, and thickness.—Although the Tallahatta formation has been noted in only six wells, the distribution of these wells suggests that the Tallahatta underlies most of the Savannah area. The formation consists of limestone and marl. Generally, the lower part of the formation is limestone and top is marl. The limestone is cream colored, granular, and somewhat loosely consolidated; it contains clay, phosphatic minerals, and chert. Coarse glauconite is abundant in the lower part of the limestone section. In the southern part of the area, the Tallahatta is 250 feet thick (1,430–1,680 ft) in well LIB–185 and 200 feet thick (955–1,155 ft) in well CHA–357. Farther north, in well PI–2, only 53 feet (1,017–1,070 ft) of Tallahatta is present and it consists of thin stringers of limestone interbedded with soft, sandy, cream-colored, cherty marl.

Water-bearing properties.—The Tallahatta formation is not a source of water for domestic, municipal, or industrial purposes in the Savannah area because its fine-grained materials yield only small amounts of water and the water is mineralized. The formation is important hydrologically because it forms part of the lower confining layer for the principal artesian aquifer.

LISBON FORMATION

The Lisbon formation occurs only in the subsurface in the Savannah area. In this report it is considered to be equivalent in age to the McBean formation which occurs in updip exposures. It conformably overlies the Tallahatta formation of Claiborne age and is conformably overlain by the Gosport sand of Claiborne age.

Character, distribution, and thickness.—In outcrops the Lisbon (McBean) formation consists of fine- to medium-grained, locally indurated, glauconitic sand interbedded with thin beds of gray, sandy, fossiliferous clay containing hard lime nodules. However, in the subsurface in the Savannah area, the Lisbon formation is mostly a soft, white or gray to cream-colored limestone. Lithologically it is somewhat difficult to differentiate from formations above and below. It is rather massive in some parts of the area, being highly calcitized. In well CHA–452 solid cores of material described as Lisbon are composed mostly of fragments, casts and molds of macrofossils, echinoid and bryozoan remains, and some Foraminifera. The limey pieces are cemented by calcium carbonate. The resulting rock, although generally soft or easily broken, is dense and massive in appearance. In some intervals the occurrence of coarse grains of glauconite slightly changes the color of the rock

to pale green. The presence of dolomitic limestone modifies the color to shades of yellow and tan. East of a line between Port Wentworth and Union Bag-Camp Corp. in Savannah the formation contains less limestone and more silt, clay, and marl, and its permeability is lessened.

The Lisbon formation is recorded in all parts of the area from wells penetrating middle Eocene strata.

Water-bearing properties.—In and near the outcrop area the Lisbon yields sufficient water for rural, domestic, and municipal supplies. Downdip, in Screven and Effingham Counties, the Lisbon is reached at greater depths, and its water-bearing characteristics in this area are unknown. Still farther downdip, in western Chatham County, the Lisbon formation in part forms the lowest part of the principal artesian aquifer. In the easternmost part of the area, however, the Lisbon is not considered part of the principal artesian aquifer because of the previously mentioned lithologic changes. Along the coast the Lisbon acts as a barrier to the movement of water and is considered to be part of the lower confining layer.

Base of principal artesian aquifer.—The fence diagram (pl. 2) shows the extent and thickness of the Lisbon formation, and the geologic section *A–A′*, plate 3, illustrates how the bottom of the principal artesian aquifer rises eastward, cutting across time lines because of a facies change in the sediments. In the vicinity of Savannah the upper boundary of the lower confining layer is about the middle of the Lisbon formation at an approximate depth of 850 feet, but along the coast the upper boundary of the lower confining layer and the top of the Lisbon coincide, generally at a depth of about 700 feet.

The bottom of the principal aquifer is in part determined by the chemical content of the water, which increases with depth to the east and northeast. No line or limit can be set as to the depth at which "good" water is available, but an unusably high chloride content will determine the lower limit for developing water. For example, in well BFT–101 on Hilton Head Island, S.C., water with a chloride content of 368 ppm was recovered from a well point isolated at 543 feet. The bottom of the aquifer extends to a depth of approximately 700 feet in this vicinity, but the lower part of the aquifer, below about 500 feet, contains water high in chloride and cannot be regarded as a source of usable water for normal purposes.

GOSPORT SAND

The Gosport sand of middle Eocene age is the uppermost formation of Claiborne age. It is exposed only at a few localities in central Georgia. In the Savannah area, it is entirely in the subsur-

only 30 feet (840–870 ft) thick. To the east, in well CHA–357, 21 feet (1,414–1,435 ft) of this unit was penetrated before drilling stopped at 1,435 feet. In this well the lower unit is almost a marl; however, penetration was not deep enough to be certain. One other well, PI–2, reportedly penetrated the entire Paleocene, 260 feet (1,065 to 1,325 ft) thick, but the Clayton was not segregated into the two units in this well.

The upper unit of the Clayton is a sandy limestone. It is dark gray, silty, and clayey and includes stringers of fine- to coarse-grained indurated sand. It is fossiliferous and coarsely glauconitic throughout. The occurrence of *Robulus midwayensis* (Plummer) Cole and Gillespie, a key Foraminifera for the Clayton, indicates that this unit is of marine origin. In wells in Liberty, Chatham, and Hampton Counties the upper unit is from 10 to 200 feet thick.

Water-bearing properties.—In the Savannah area the Clayton lies about 400 to 600 feet below the bottom of the principal artesian aquifer. The Clayton formation is used as an aquifer in the southwestern part of Georgia. In Seminole County the formation attains a thickness of 300 feet or more and yields of 500 to 600 gpm have been obtained (Herrick and Wait, 1956). The water in Seminole County is a hard lime water, although satisfactory for most uses. The Clayton formation in the Savannah area is not regarded as a potential source of useable ground water because the sediments are too fine grained and the water is highly mineralized. Chemical analyses of water from the Clayton at 1,260 feet in well CHA–357 show 21,400 ppm (parts per million) of dissolved solids. (See table 6.)

EOCENE SERIES

ROCKS OF WILCOX AGE

Deposits of Wilcox age have been differentiated into at least three formations in western Georgia, but a similar subdivision in eastern Georgia is not possible at this time. The deposits of Wilcox age in eastern Georgia and in the Savannah area have not been named, but probably are equivalent to the Nanafalia, Tuscahoma, and the Bashi marl member of the Hatchetigbee formation.

Strata of early Eocene age are exposed in a very irregular belt extending from the Chattahoochee Valley, in Clay County, northeastward to Macon County. In the Savannah area deposits of Wilcox age are concealed beneath overlapping sediments of younger Tertiary age (MacNeil, 1944, p. 24 and 1947a, b).

Deposits of Wilcox age lie unconformably on the Clayton formation and in the Savannah area they are overlain by the Tallahatta formation of middle Eocene age. In some wells in the Savannah

area deposits of Wilcox age have not been identified, and the Tallahatta lies unconformably on the Clayton formation.

Character, distribution, and thickness.—Deposits of Wilcox age in the Savannah area are composed mostly of marl. Formations of Wilcox age in western Georgia are composed mostly of sand.

In well LIB–185 the Wilcox consists of 55 feet (1,840–1,895 ft) of dark-brown, silty, carbonaceous, fossiliferous, coarsely glauconitic marl. Above the marl is 160 (1,680–1,840 ft) of loosely consolidated, granular, cream-colored limestone, which is argillaceous, phosphatic, and glauconitic. This limestone is similar to the overlying limestone of the Tallahatta formation.

In CHA–357, 102 feet (1,156–1,258 ft) of deposits of Wilcox age consist almost entirely of marl. The marl is cream colored, glauconitic, somewhat granular, and is interbedded with thin tongues of cream-colored, saccharoidal and fossiliferous limestone. The marl is also interbedded with thin stringers of fine- to medium-grained sand.

Formations of Wilcox age may be present in the northern part of the area, as indicated in the log of well HAM–30. In a preliminary study of the cuttings from the well, S. M. Herrick (written communication 1956) has tentatively identified 100 feet (600–700 ft) of sediments to be of Wilcox age.

Water bearing properties.—In southwestern Georgia part of the formations of Wilcox age constitute a major aquifer (Herrick and Wait, 1956, p. 80). Yields of as much as 700 gpm are obtained from sands of the Tuscahoma formation at Albany, in Dougherty County. In the Savannah area, however, the potential water-bearing zones are relatively thin, as in well HAM–30, and the water probably is highly mineralized because in well CHA–357, at depth 1,260 feet, water from the upper portion of the Clayton is highly mineralized. (See table 6.)

ROCKS OF CLAIBORNE AGE

In the Savannah area deposits of Claiborne age are represented by three marine formations: the lower unit is equivalent to the Tallahatta formation, the middle part to the Lisbon (McBean) formation, and the upper part to the Gosport sand. In many instances the group is designated as undifferentiated because of the paucity of diagnostic properties. (See pl. 2.)

TALLAHATTA FORMATION

The Tallahatta formation is the name applied to rocks in the Savannah area, which are equivalent in age to the Tallahatta formation of the eastern Gulf Coast. In the Savannah area the Tallahatta formation unconformably overlies rocks of early Eocene age,

The restricted Eutaw formation in the Savannah area consists of fine- to medium-grained sand which is indurated, glauconitic, phosphatic, fossiliferous, and is interbedded with thin stringers of gray, micaceous, carbonaceous, and fissile clay. In well LIB–185 the restricted Eutaw is 145 feet thick (3,420–3,615 ft), and in well PI–2 it is 104 feet thick (2,565–2,669 ft).

The post-Eutaw, or uppermost Cretaceous deposits, include marl and sandy marl, which are silty, micaceous, glauconitic and pyritiferous. Some of the lower parts of the deposits contain carbonaceous and fissile clay.

The post-Eutaw deposits probably are equivalent in age to the Austin, Taylor, and Navarro deposits of the Gulf Coastal Plain. In well PI–2 approximately 1,240 feet (1,325–2,565 ft) represents sediments of post-Eutaw age, and in well LIB–185 post-Eutaw is represented by 1,190 feet (2,280–3,470 ft) of sediments.

The regional southeastward dip at the top of the beds of Cretaceous age changes locally to a southward dip according to the available well data. The surface of the Upper Cretaceous probably is an undulating erosional surface. The gradient between well CHA–316 and well LIB–185 is about 21 feet per mile over a distance of 32½ miles, disregarding local relief.

Except in well HAM–30, rocks of the Upper Cretaceous series lie at a depth greater than 1,325 feet, and below the source of large volumes of good quality water in the principal artesian aquifer. Where the principal artesian aquifer is missing in South Carolina the Upper Cretaceous sands may be a source of ground water.

In well HAM–30 in South Carolina the Upper Cretaceous rocks begin at approximately 870 feet. The well originally was drilled to 1,387 feet; however, not much ground water was reported below 950 feet. The well was filled to 650 feet in 1953, and it yielded 780 gpm (gallons per minute) by pumping from Tertiary formations. Drawdown was reported to be approximately 69 feet with the pumping level at 100 feet.

Few data are available about the water-bearing character of the Upper Cretaceous rocks in the Savannah area. Various formations in the Upper Cretaceous series have proved to be satisfactory aquifers in other parts of the Coastal Plain. However, data are insufficient to determine the potentialities of the Upper Cretaceous rocks as aquifers in the Savannah area, and the authors believe that a comprehensive program of test drilling and aquifer studies should precede any plans for large-scale development of the Upper Cretaceous series in the coastal counties of Georgia and South Carolina.

TERTIARY SYSTEM

PALEOCENE SERIES

The Paleocene rocks in the Savannah area include the Midway group, which was once considered to be the oldest division of the Eocene series.

In Alabama, deposits of Midway age include three or more formations of which only the Clayton formation is represented in the Savannah area. The Paleocene series in southeasternmost South Carolina is not named, but S. M. Herrick (written communication, 1956) has applied the name Clayton to subsurface rocks in South Carolina. Cooke and MacNeil (1952, p. 21) previously indicated that what had been mapped as Black Mingo of early Eocene age should, in part, be considered of Paleocene, and probably of Midway, age.

CLAYTON FORMATION

The Clayton formation is the basal formation of Midway age. It crops out in an irregular belt from Quitman County, Ga., northeastward to a point slightly west of the Ocmulgee River in Twiggs County, Ga. The Clayton formation has been traced updip in the subsurface as far east as the Oconee River, Laurens County, Ga. S. M. Herrick (written communication, 1956) believes that with additional data this formation could be extended as far eastward as the Savannah River in southern Screven County, Ga. and Hampton County, S.C.

The Clayton formation lies unconformably on sediments of Late Cretaceous age and is overlain unconformably by overlapping formations of Wilcox and younger ages.

Character, distribution, and thickness.—The Clayton formation apparently underlies all the Savannah area because it is reported in well cuttings from southern and northern extremes of the area. The four well logs in the area showing Clayton deposits suggest two rather distinct lithologic units, which vary from one well to another and change considerably over long distances.

The lower unit is a calcareous sand, generally gray in color but ranging from light gray to dark brown. The unit is glauconitic, especially its lower part, and is generally fossiliferous throughout. This member represents a basal sand formed by a sea transgressing the Coastal Plain during earliest Paleocene time. Common Foraminifera and Ostracoda attest to the marine character of the lower unit. In well LIB–185, 185 feet (2,095–2,280 ft) of this unit is present. Farther north, in well CHA–316, the unit is 80 feet thick (1,150–1,590 ft), but only 50 feet 1,540–1,590 ft) of the unit was sampled. Still farther north, in well HAM–30, the lower unit is

TABLE 1.—*Generalized description and water-bearing properties of geologic units in Savannah area*

System	Series	Geologic unit	Thickness (feet)	Lithology	Water-bearing properties
Quaternary and Tertiary.	Recent to Pliocene.	Undifferentiated sediments; include Waccamaw(?) formation of Pliocene age.	0–145	Terrace, flood-plain, alluvial, and beach deposits consisting of silt, sand, and gravel. Blue-gray to brown marl; silty and sandy.	Probably good supplies available from thick sections. Screens and development necessary. Water may be high in iron, sulfate, and nitrate, generally soft. Hydrogen sulfide causes "rotten egg" odor.
		—Unconformity—			
Tertiary	Miocene	Duplin marl	0–20	Tan to light-brown marl; some shells and clay; not much sand.	Few available data indicate small yields; water reported rather hard.
		—Unconformity—			
		Hawthorn formation	0–420	Green silt and sand interbedded with clay, marl, and altered limestone.	Probably will yield water for small domestic supplies. Higher yields possible from thick sections with proper development. Water hard and probably high in iron. Important as a confining bed rather than an aquifer.
		Tampa limestone	0–130	Yellowish-green calcareous, argillaceous sand interbedded with dolomitic limestone. Thin conglomeratic unit at the base.	Upper unit of principal artesian aquifer in most places. Yields reported up to 200 gpm. Hydrogen sulfide often detected in water; water moderately hard.
		—Unconformity—			
	Oligocene	Undifferentiated rocks	0–200?	Loosely consolidated gray to buff limestone. Dense, white sandy and cherty limestone in thin stringers. Thick unit of sand in northwest.	Part of principal artesian aquifer. Yields up to 500 gpm reported. Water is moderately hard.

Tertiary	Eocene	—Unconformity—			
		Ocala limestone	Upper unit	0–155	Differentiated only in the northeastern part of area. White limestone, fossiliferous, somewhat calcitised, and crystalline.	Major part of principal artesian aquifer. The upper unit of the Ocala and the overlying Oligocene rocks apparently are the most permeable parts of the aquifer. Yields of 500 to 4,200 gpm are possible from wells penetrating the entire principal aquifer. Water is moderately hard, low in iron and chloride. Water from lower part of the aquifer may have relatively high chloride. Temperature ranges from 67° to 79° F, depending on depth.
			Lower unit	0–280	Differentiated only in the northeastern part of area. Buff soft granular limestone. Thin layers and tongues of dense pale-blue calcitised limestone and silty, clayey limestone or marl. Glauconitic in the lower portions. In the southern and western parts of the area the Ocala limestone has not been differentiated into its upper and lower units; the undifferentiated Ocala has a thickness of about 575 ft.	
		Gosport sand		?–400	Cream-colored and white to gray dense sandy fossiliferous limestone and pale-green glauconitic marl.	Yields as much as 650 gpm reported from thick sections of the formation. Water is moderately hard and high in chloride near the coast. Lowest unit of principal artesian aquifer in eastern part of area.
		Lisbon formation		12–405	Mostly soft limestone, white, gray, and buff; but may be massive highly calcitised or glauconitic and dolomitic in some parts of the area. Some silt, clay, and marl in eastern part of area.	Lowest part of principal artesian aquifer in western part of area, part of lower confining bed in eastern part because of change in permeability.

mild, but include occasional cold periods of a few days duration. Summers commonly are long and hot; maximum temperatures range from 95° to 100°F during July and August. According to the U.S. Weather Bureau, the average annual precipitation recorded at Savannah for the period 1874 to 1958 is 45.75 inches, and the average annual temperature for the period 1874 to 1958 is 66.4°F. Rainfall usually is well distributed for agricultural needs, and the largest amounts occur during the spring and summer. The distribution of the average monthly precipitation and temperature at Savannah is given below:

Month	1874–1958	
	Precipitation (inches)	Temperature (°F)
January	2.45	51.6
February	2.82	53.4
March	3.49	58.7
April	2.47	65.7
May	2.91	72.9
June	5.17	79.0
July	7.09	81.2
August	6.25	80.4
September	6.50	76.7
October	2.45	67.0
November	1.51	57.5
December	2.64	51.7

The average frost-free growing season is 273 days; the average date for the last freeze in spring is February 26 and for the first freeze in fall is November 26.

CULTURAL DEVELOPMENT

The population of the area outside of Chatham County has decreased slightly from 1940 to 1950. The 1950 population for the counties covered by this investigation is listed as follows:

County	Total area (sq mi)	Population (rounded)	
		Total (1960)	Average (per sq mi)
Beaufort, S.C.	672	27,000	40
Bryan, Ga.	439	6,000	14
Chatham, Ga.	441	[1] 193,000	400
Effingham, Ga.	480	9,000	19
Jasper, S.C.	578	11,000	19
Liberty, Ga.	510	8,000	17
	3,120	254,000	----------

[1] Estimate of July 1, 1958 by the Georgia Department of Health.

Most of the people are employed by industries in the city of Savannah and Chatham County. There are many farms in the area which grow cotton, corn, tobacco, livestock, and pecans, but non-farm employees outnumber farm workers by about eight to one.

Many products are manufactured and processed in the Savannah area. The many large industries include the world's largest pulp and paper mill, a sugar refinery, shipbuilding and repair, fertilizer plants, and chemicals. Savannah is a large seaport as well as a large manufacturing center. Many of the factories are near the Savannah River where they are served by ocean-going vessels which bring in raw materials and take out manufactured products.

Two military bases, Hunter Air Force Base and Fort Stewart, are in the Savannah area. Parris Island Marine Corps Recruit Depot is located on Parris Island in Beaufort County, S.C.

Savannah is served by five railroads, two major U.S. highways, and three airlines.

GEOLOGY AND WATER-BEARING PROPERTIES OF THE ROCKS

All the sedimentary rocks in the Savannah area are of late Mesozoic and Cenozoic age. Only sand and clay of Pleistocene to Recent age are exposed at the surface, except in the northern part where older rocks crop out along the banks of the Savannah River. Most of the formations were deposited during various transgressions and regressions of ancient seas. Associated with the deposits that were laid down during the marine invasions and retreats are sediments that appear to have been deposited in bays, lagoons and estuaries, or generally in nearshore areas. A lesser amount of the sediment was deposited on river flood plains closely adjacent to the sea.

In the Savannah area the rocks underlying Upper Cretaceous sediments, the lowermost sedimentary rocks, have been called the basement complex. They consist of a wide variety of igneous and metamorphic rocks.

The water-bearing properties of any rock are determined in part by its physical properties such as grain size, texture, porosity, permeability, cementation, compaction, and constituent minerals. The ability of a formation to store and transmit water is determined by its shape, altitude, and position relative to recharge and discharge.

Most of the water used in the Savannah area comes from the principal artesian aquifer, which is composed of limestone and marl of middle Eocene to early Miocene age. The term "marl" in this

690-437—63——2

3. The material as it is recovered from the well is wet and usually soft. However, when the cuttings dry they harden and material that is high in calcium carbonate may be described erroneously as limestone.

ACKNOWLEDGMENTS

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The U.S. Geological Survey is indebted to Mr. Fred Hack, Vice President of the Hilton Head Co., for the lease of a plot of land upon which to drill test well BFT-101 on Hilton Head Island, S.C., and to Mr. Ralston Lattimore of the National Park Service, U.S. Department of the Interior for permission to drill test well CHA-357 at the Fort Pulaski National Monument, Chatham County, Ga. Thanks are due Dr. M. L. Taylor and Messrs. G. C. Kimble and Maurice Klein of the Union Bag-Camp Paper Corp. for courtesies extended during the investigation. Thanks also are due to the officials of Chatham County, the city of Savannah, and the Savannah Metropolitan Planning Commission for valuable help with the investigation.

WELL-NUMBERING SYSTEM

The well numbers used in this report were assigned to the wells consecutively in each county as the wells were scheduled. An abbreviation for the county in which the well is located precedes the well number distinguishing it from a well with the same number in another county. For example, well CHA-357 is the 357th well scheduled in Chatham County, Ga. The only exception is well PI-2 which is the second test well drilled on Parris Island, Beaufort County, S.C.

GEOGRAPHY

THE ATLANTIC PLAIN

The Savannah area lies within the Sea Island section of the Coastal Plain province, which is a part of the Atlantic Plain (Fenneman, 1938). The Atlantic Plain is subdivided into two parts, the emerged plain or Coastal Plain, and the submerged Continental Shelf. The Atlantic Plain extends from southern Texas eastward to central Georgia and Florida and northward to Cape Cod, Mass.

The Gulf and Atlantic Plains are similar in many respects, but there are also differences, of which the most striking feature is that the Atlantic Plain, excluding the Florida Peninsula, is much narrower than the Gulf Plain. The average width is about 200 miles for both the submerged part and the emerged part. In contrast the Gulf Plain is about 500 miles wide from its inner margin, the Fall Zone, to the outer edge of the Continental Shelf.

The seaward slope of the Coastal Plain is only slightly interrupted by features of the coastal terraces and the present shore. From the Fall Zone near Augusta at an approximate altitude of 450 feet and on a line southeastward through Savannah, the relief is about 450 feet in 125 miles. The gradient of the land surface averages about 3.6 feet per mile, about the same as that of the Continental Shelf. The coastal terraces generally are flatter and their gradients, which are about 1.5 feet per mile, are similar in magnitude to the flattest part of the Continental Shelf.

The Savannah area is drained by two major rivers and many small streams and estuaries. The two major rivers, the Savannah and Ogeechee, generally cross the coastal terraces at right angles and pass through the Savannah area from northwest to southeast and empty into the Atlantic Ocean. (See pl. 1.)

THE CONTINENTAL SHELF

The Continental Shelf is the submerged part of the continent and is the continuation, beneath the sea, of the Atlantic Plain. The inner edge of the Continental Shelf is arbitrarily drawn at the present coastal beaches. The outer edge of the Continental Shelf usually is defined as the 100 fathom line (600 ft below mean sea level). At 600 feet the slope increases markedly, and this increase in slope marks the edge of the continent. A notable exception to this exists in the region extending from Cape Hatteras, N.C., to eastern Florida where the steep slope begins at a depth of about 50 fathoms, or 300 feet. The Continental Shelf varies in width, but near the Savannah area it is about 85 miles wide.

From the coast to the outer edge of the Continental Shelf the overall average gradient is about 3.5 feet per mile. However from the shore to 1 or 2 miles offshore the gradient is greater, about 30 feet per mile. The slope between 10 and 20 fathoms (60 and 120 ft) is about 2 feet per mile, and from 20 to 50 fathoms (120 to 300 ft) gradients average 3.5 feet per mile.

CLIMATE

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Reference No. 6

U.S. DEPARTMENT OF COMMERCE
C. R. Smith, Secretary

ENVIRONMENTAL SCIENCE SERVICES ADMINISTRATION
Robert M. White, Administrator

ENVIRONMENTAL DATA SERVICE
Woodrow C. Jacobs, Director

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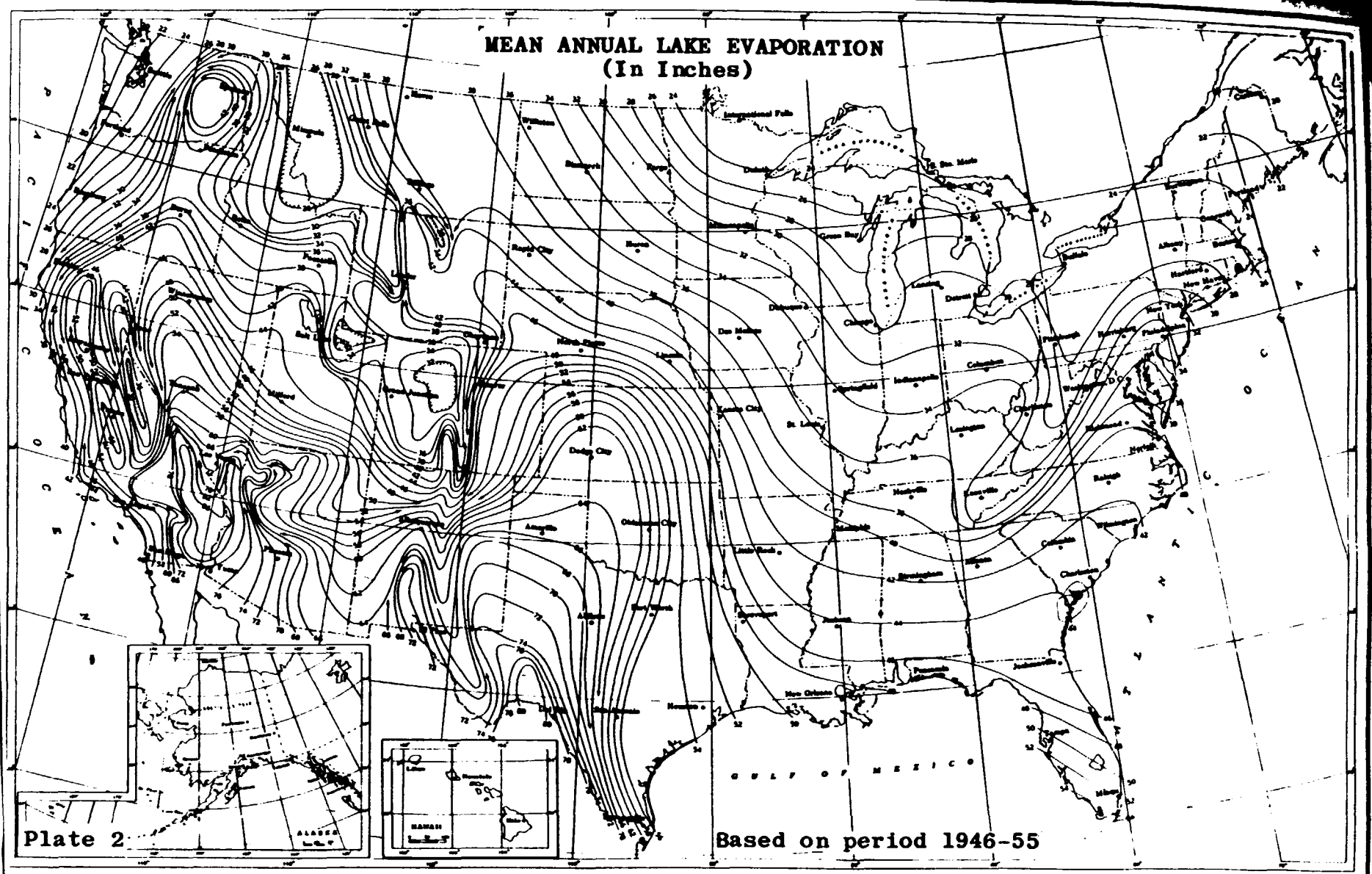
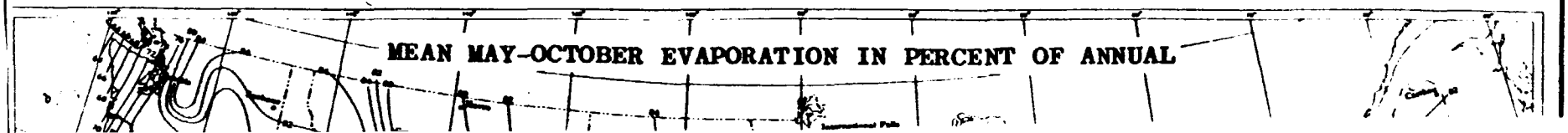
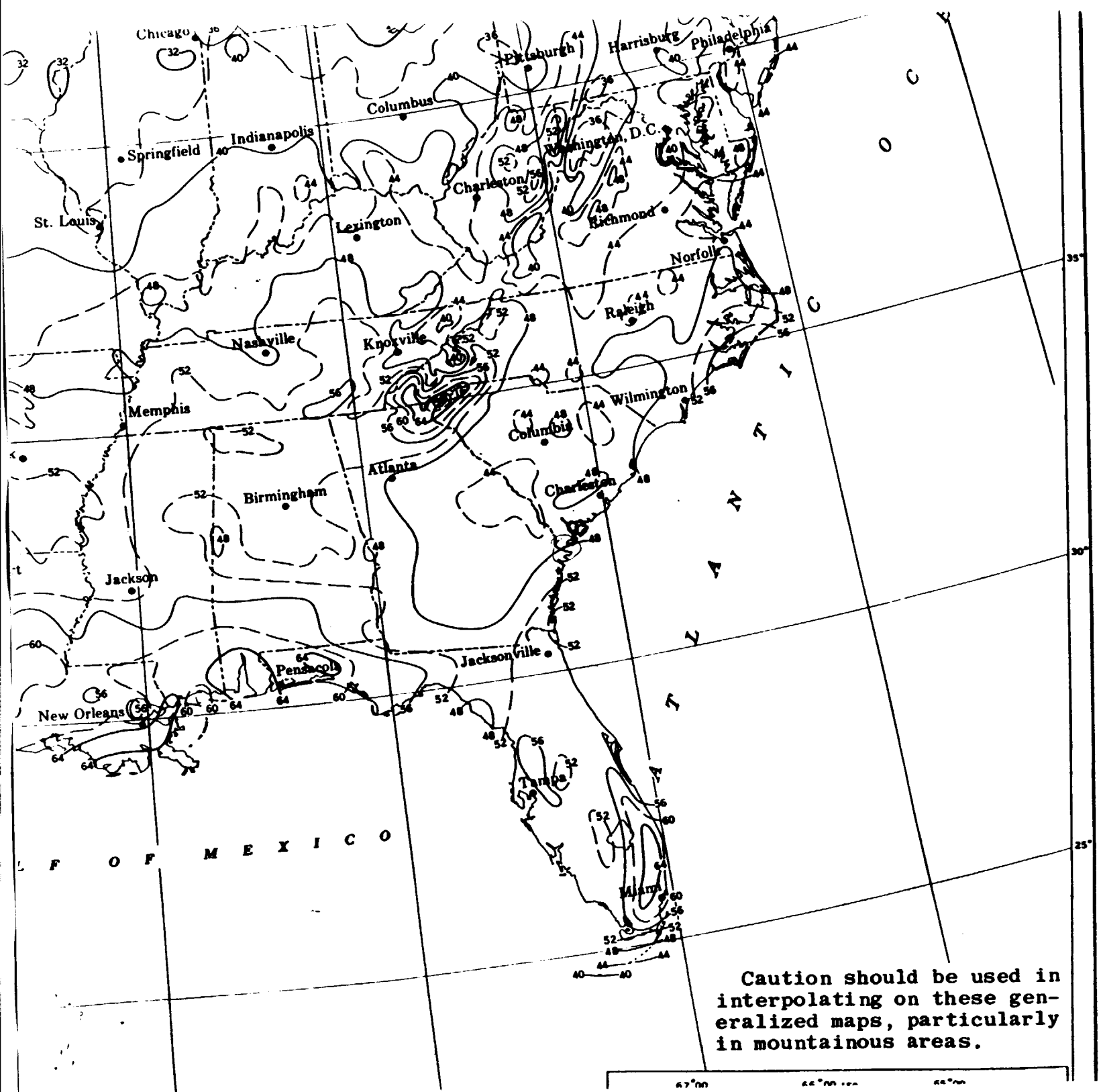
1983

For sale through the National Climatic Data Center, Federal Building, Asheville, N.C. 28801, Attn: Publications.

LAKE EVAPORATION







Caution should be used in interpolating on these generalized maps, particularly in mountainous areas.

GROUND-WATER DATA FOR GEORGIA, 1986

By J.S. Clarke, S.A. Longsworth, C.N. Joiner,

M.F. Peck, K.W. McFadden, and B.J. Milby

Open-File Report 87-376

Prepared in cooperation with the

GEORGIA DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION
GEORGIA GEOLOGIC SURVEY

Doraville, Georgia

1987

2.3 Water-Table Aquifers

Shallow water-table aquifers are used for domestic and stock supplies in most areas of Georgia. In the Piedmont and Blue Ridge provinces the aquifers consist of residual soils derived from weathering of crystalline rocks. In the southwestern part of the Coastal Plain province, the aquifers consist of undifferentiated sand, clay, and limestone ranging in thickness from less than 10 feet to about 125 feet (Hayes and others, 1983). Water-table aquifers in the Savannah area consist of sand, silt, and clay containing some shell and gravel beds.

Water-level fluctuations in these aquifers are caused mainly by changes in precipitation. Water levels generally rise rapidly during wet periods and decline slowly during dry periods. Prolonged droughts may cause water levels, particularly on hill tops and steep slopes, to decline below pump intakes in dug, bored, or shallow drilled wells and result in temporary well failures. Generally, the well yields are restored with the return of precipitation.

The mean water levels in four wells tapping shallow water-table aquifers were from 2.7 feet higher to 2.5 feet lower in 1986 than in 1985. During 1986, the mean water level in well 11AA01 in Spalding County in the Piedmont province was about 2.5 feet lower than in 1985. As a result of below-normal rainfall, a new record low was measured in November that was slightly lower than the previous record low measured in December 1981. Above-normal rainfall in late November and December caused the water level to recover about 4 feet from the record low measured in early November.

In the southwestern part of the Coastal Plain province (Dougherty Plain), the mean water levels in wells 13M007 in Worth County and 07H003 in Miller County were about the same in 1986 as in 1985. In the Coastal Plain province near Savannah, the mean water level in well 35P094 was about 2.7 feet higher in 1986 than in 1985. The annual minimum water levels in wells 07H003, 13M007, and 35P094 were from 0.9 foot to 6.1 feet higher than the record lows set in November 1981, October 1981, and November 1972, respectively. By the end of 1986, the water level in well 07H003 had recovered about 8.5 feet from the low measured in November; in well 13M007 the water level had recovered about 4.7 feet from the low measured in November; and in well 35P094 the water level had recovered about 6.9 feet from the low measured in August.

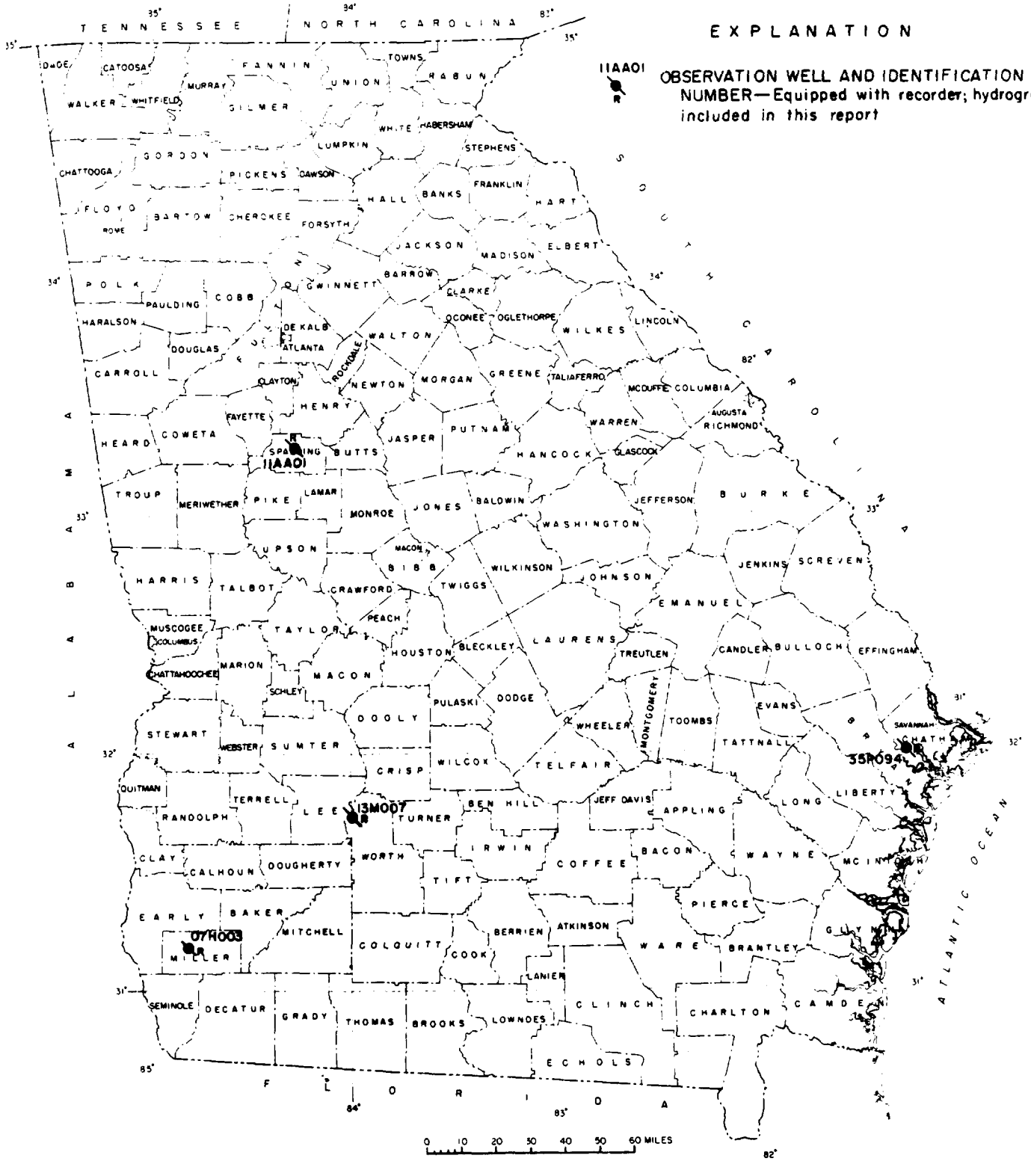


Figure 2.3-1.— Locations of observation wells in the water-table aquifers.

35P094 UGA CHATHAM COUNTY

315950081161201 Local number, 35P094.
LOCATION.--Lat 31°59'50", long 81°16'12", Hydrologic Unit 03060204, Barbour Lathrop Plant Introduction Station, 10 miles south of Savannah, north of the intersection of U.S. Highway 17 and Argyle Rd.
Owner: University of Georgia, formerly U.S. Department of Agriculture.
AQUIFER.--Sands of Holocene and Pleistocene age.
WELL CHARACTERISTICS.--Bored observation well, diameter 30 in., depth 15 ft, cased to 15 ft, open end.
DATUM.--Elevation of land-surface datum is 18.67 ft.
Measuring point: Iron bracket on recorder shelter, 3.3 ft above land-surface datum.
REMARKS.--Responds quickly to precipitation. Water levels for periods of missing record, August 24, September 19-23, and October 11-12, were estimated.
PERIOD OF RECORD.--August 1942 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 0.05 ft below land-surface datum, September 26, 1953; lowest, 12.28 ft below land-surface datum, November 30, 1972.

Water level, in feet below land surface, through calendar year 1986 daily mean values - monthly mean values

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	7.02	7.19	4.43	4.75	6.69	9.00	10.11	10.68	3.89	6.56	7.95	6.20
2	7.15	7.17	4.42	4.80	6.78	9.04	10.15	10.72	3.98	6.69	7.82	5.96
3	7.20	7.14	4.43	4.89	6.91	9.10	10.19	10.76	4.12	6.81	7.78	5.70
4	7.07	7.15	4.48	4.97	7.06	9.15	10.23	10.67	4.25	6.92	7.79	5.47
5	7.11	7.16	4.54	5.02	7.16	9.19	10.27	10.08	4.37	7.04	7.79	5.35
6	---	6.88	4.57	5.08	7.25	9.22	10.30	9.89	4.50	7.19	7.83	5.34
7	---	5.75	4.64	5.12	7.35	9.26	10.34	9.82	4.62	7.45	7.94	5.35
8	---	5.10	4.73	5.09	7.43	9.31	10.37	9.80	4.76	7.61	7.99	5.38
9	---	4.80	4.76	5.09	7.56	9.35	10.41	9.58	4.87	7.68	8.00	5.43
10	---	4.47	4.78	5.16	7.72	9.36	10.43	8.79	4.98	7.56	8.03	5.47
11	---	3.54	4.83	5.21	7.80	9.34	10.47	8.53	5.08	7.31	8.05	5.28
12	---	3.32	4.89	5.28	7.85	9.35	10.50	7.71	5.16	6.99	8.08	4.77
13	---	3.41	4.92	5.34	7.93	9.40	10.54	6.01	5.26	6.79	8.12	4.34
14	---	3.48	4.31	5.41	7.98	9.44	10.56	3.78	5.36	6.80	8.20	4.22
15	---	3.57	3.90	5.45	8.06	9.48	10.58	3.82	5.47	6.86	8.22	4.21
16	---	3.68	3.84	5.50	8.12	9.52	10.61	4.03	5.58	6.90	8.23	4.22
17	---	3.75	3.87	5.58	8.17	9.54	10.65	4.26	5.67	6.99	8.22	4.20
18	---	3.81	3.92	5.66	8.24	9.58	10.69	4.43	5.75	7.11	7.99	4.20
19	---	3.89	3.96	5.72	8.31	9.60	10.72	4.41	5.76	7.23	7.83	4.27
20	---	3.98	4.03	5.75	8.37	9.64	10.75	3.93	5.77	7.31	7.60	4.26
21	---	4.06	3.99	5.79	8.41	9.68	10.79	4.03	5.79	7.39	7.32	4.18
22	---	4.12	4.03	5.91	8.46	9.72	10.81	4.23	5.80	7.50	7.04	4.20
23	---	4.16	4.10	6.01	8.53	9.75	10.83	4.35	5.81	7.61	6.86	4.19
24	---	4.18	4.18	6.07	8.58	9.79	10.85	4.38	5.82	7.68	6.77	3.75
25	---	4.25	4.26	6.12	8.63	9.83	10.88	4.40	5.91	7.72	6.72	3.56
26	---	4.30	4.31	6.20	8.70	9.89	10.86	4.52	6.02	7.78	6.63	3.60
27	---	4.35	4.37	6.30	8.74	9.96	10.61	4.66	6.11	7.87	6.59	3.65
28	7.17	4.40	4.46	6.37	8.80	10.00	10.57	4.42	6.24	7.98	6.64	3.74
29	7.10	---	4.54	6.48	8.86	10.03	10.57	3.43	6.37	8.04	6.58	3.81
30	7.11	---	4.60	6.60	8.91	10.07	10.59	3.60	6.47	8.04	6.42	3.88
31	7.18	---	4.68	---	8.95	---	10.63	3.78	---	8.03	---	3.96
MEAN	7.12	4.75	4.38	5.56	8.01	9.52	10.54	6.37	5.32	7.34	7.57	4.59

CAL YR 1986 MEAN 6.75 HIGH 3.32 LOW 10.88

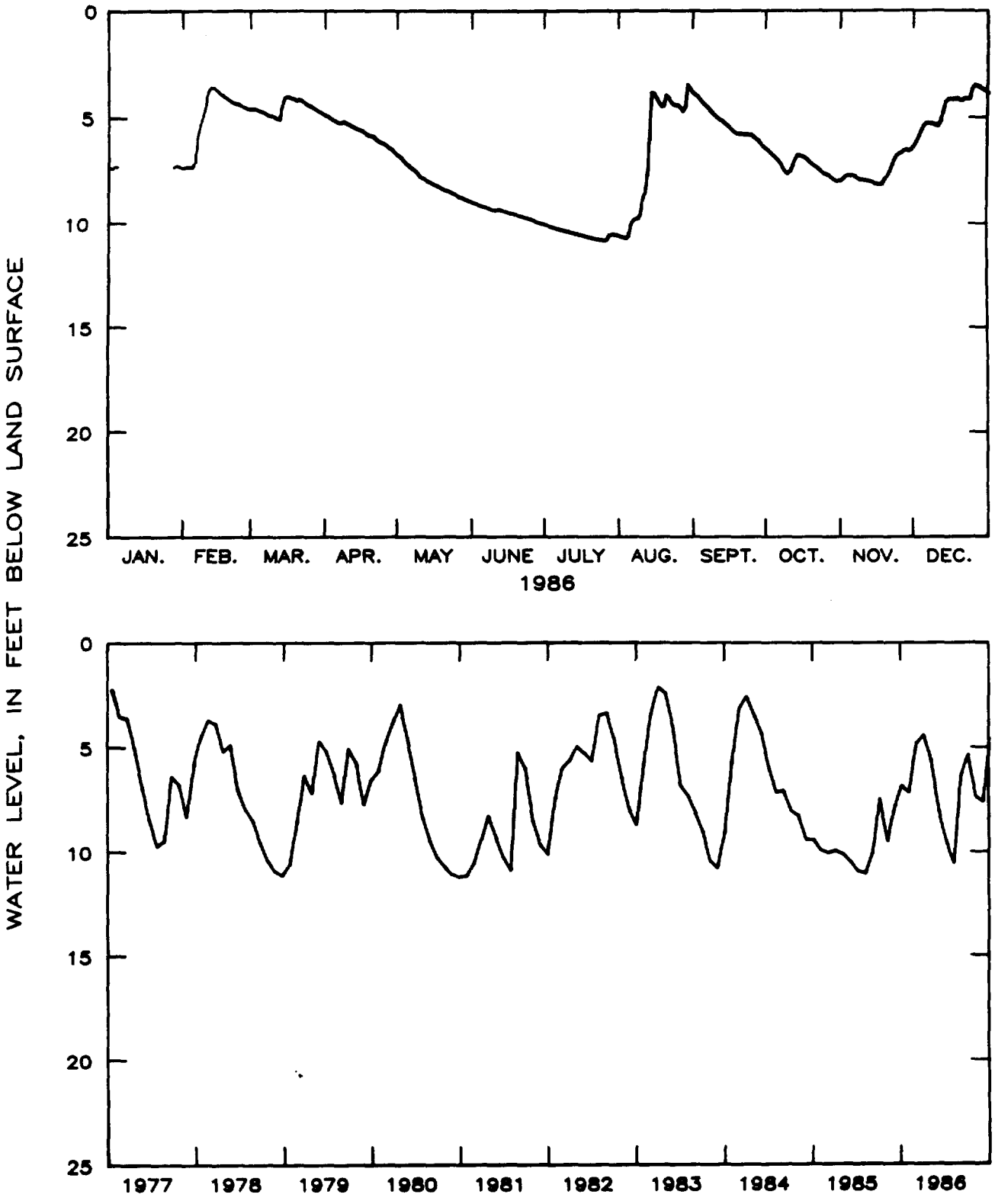


Figure 2.3–5.––Water level in observation well 35P094, Chatham County.

2.7 Upper Floridan Aquifer

The Upper Floridan aquifer (formerly the principal artesian aquifer) is part of the Floridan aquifer system, one of the most productive ground-water reservoirs in the United States. Regionally, the Floridan aquifer system has been divided by Miller (1986) into the Upper and Lower Floridan aquifers. About 600 Mgal/d is pumped from the Upper Floridan aquifer in Georgia, mostly for industrial use and for irrigation (Pierce and Barber, 1982).

The Upper Floridan aquifer consists of a sequence of limestone and dolostone that underlies most of the Georgia Coastal Plain. Water in the Floridan is under artesian pressure except where it crops out at land surface. In some areas, the artesian pressure is sufficient to produce flowing wells.

In outcrop areas, the water level in the Upper Floridan aquifer fluctuates seasonally in response to recharge from precipitation. Near the coast where the aquifer is deeply buried, the water level responds primarily to pumping, and fluctuations relating to recharge are less pronounced.

In October 1986, water levels were measured in 361 wells tapping the Upper Floridan aquifer in southwestern Georgia and adjacent parts of Alabama and Florida, and in 100 wells in the Glynn County area. From these measurements, maps were drawn showing the configuration of the potentiometric surface in each area.

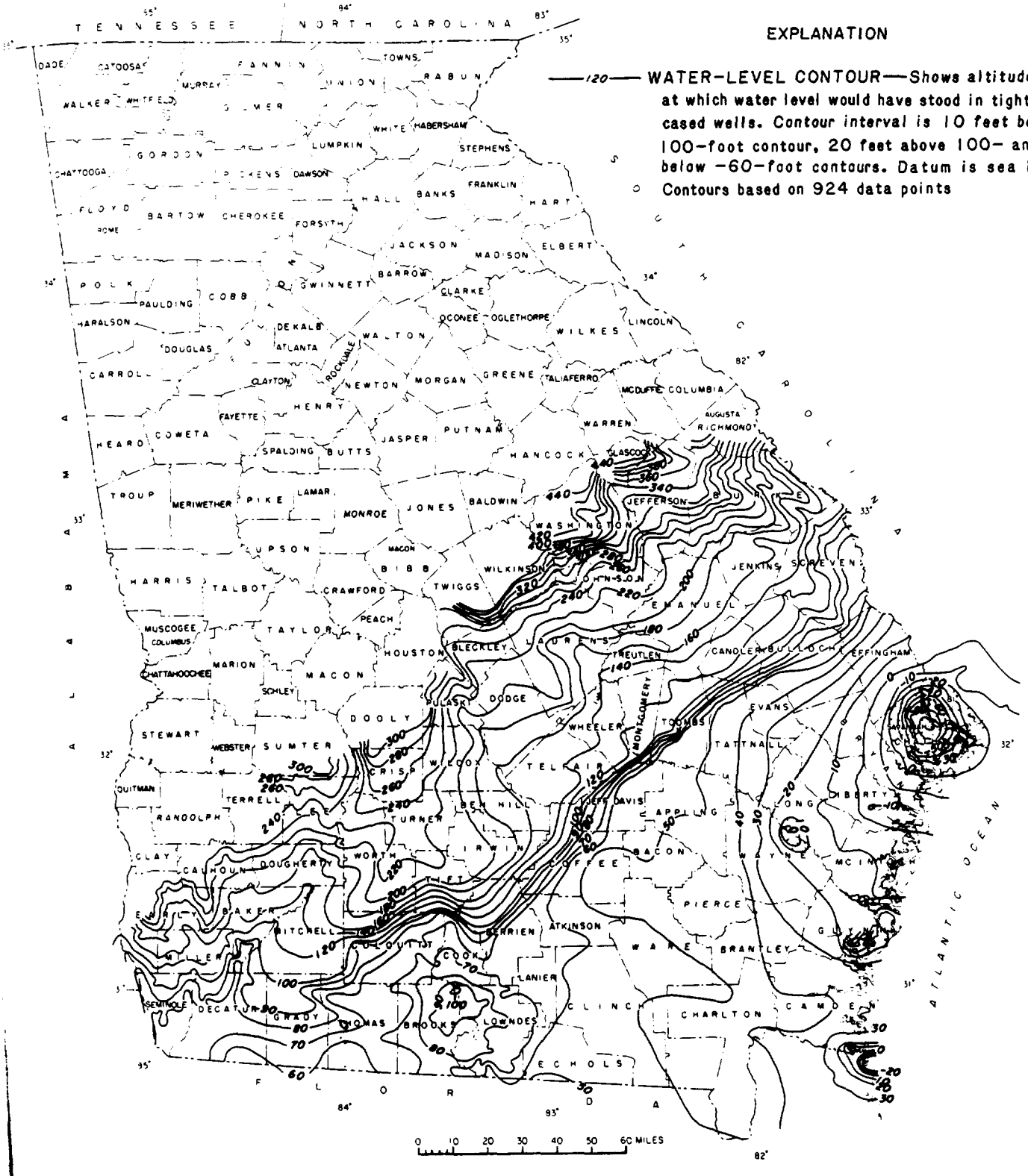


Figure 2.7-1.—Water level in the Upper Floridan aquifer, May 1985.

2.7.4 Coastal area

In the coastal area of Georgia and adjacent parts of Florida and South Carolina, the potentiometric surface of the Upper Floridan aquifer is characterized by cones of depression caused by large ground-water withdrawals. The combined pumpage in the coastal area of Georgia in 1986 was about 273 Mgal/d, about 80 percent of which was used for industrial purposes (G.L. Doonan, U.S. Geological Survey, oral commun., 1986). In the coastal areas of Georgia, nearly all the ground water is pumped from the Upper Floridan aquifer (then referred to as the principal artesian aquifer; Wait and Gregg, 1973, p. 9). Ground-water pumping from the Upper Floridan, primarily in the Savannah, Jesup, Brunswick, and St Marys-Fernandina Beach areas, has resulted in water-level declines and the development of cones of depression. Because the Upper Floridan aquifer in the coastal area is deeply buried and far from the outcrop area, the ground-water level is not influenced by concurrent rainfall. The water level is, however, affected by increased withdrawals during hot, dry periods.

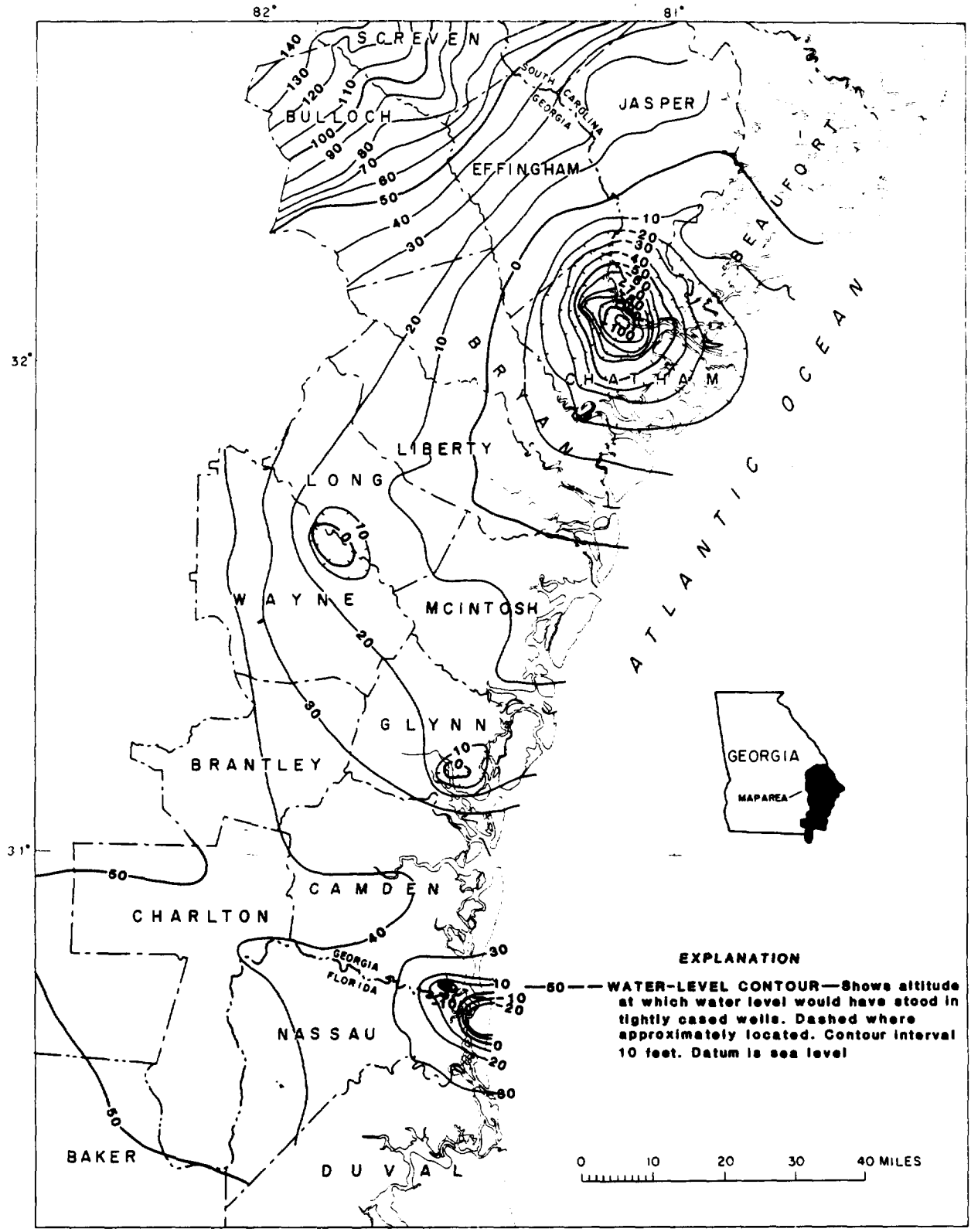


Figure 2.7.4-1.—Water level in the Upper Floridan aquifer in the coastal area, May 1985.

2.7.4.1 Savannah area

The water level in the Upper Floridan aquifer in the Savannah area is affected by pumpage for municipal and industrial use that, in 1986, exceeded 73 Mgal/d. As a result of this pumping, a cone of depression has developed in the potentiometric surface around Savannah. Hydrographs for observation wells near the center of pumping and in outlying areas illustrate the effects of pumping on the ground-water level.

During 1986, the mean water levels in four wells in the Savannah area were from 1.4 to 3.0 feet lower than in 1985. These declines continued a downward trend of water levels that began in 1983. Away from the center of pumping at Savannah, new record lows were measured in three wells during July and August. These new record lows were from 2.9 to 4.9 feet lower than the previous record lows measured in the summer of 1985 and the fall of 1980. Although the mean water level in well 36Q008, located near the center of pumping, was 3.0 feet lower in 1986 than in 1985, the annual minimum water level was 2.4 feet higher than the record low measured in August 1980. By the end of 1986, the water levels in the four wells had recovered 4.9 to 12.9 feet from the summer lows, but remained below the previous year-end levels.

Observation well 32R002, located west of the pumping center at Savannah, also responds to changes in pumping at Savannah, but less so than wells in the cone of depression. During 1986, the mean water level in the well was 1.6 feet lower than in 1985. This decline continued a downward trend since 1983. A new record low was measured in August that was 2.2 feet lower than the previous record measured in July 1985. By the end of 1986, the water level in both wells had recovered somewhat but remained below the previous year-end levels.

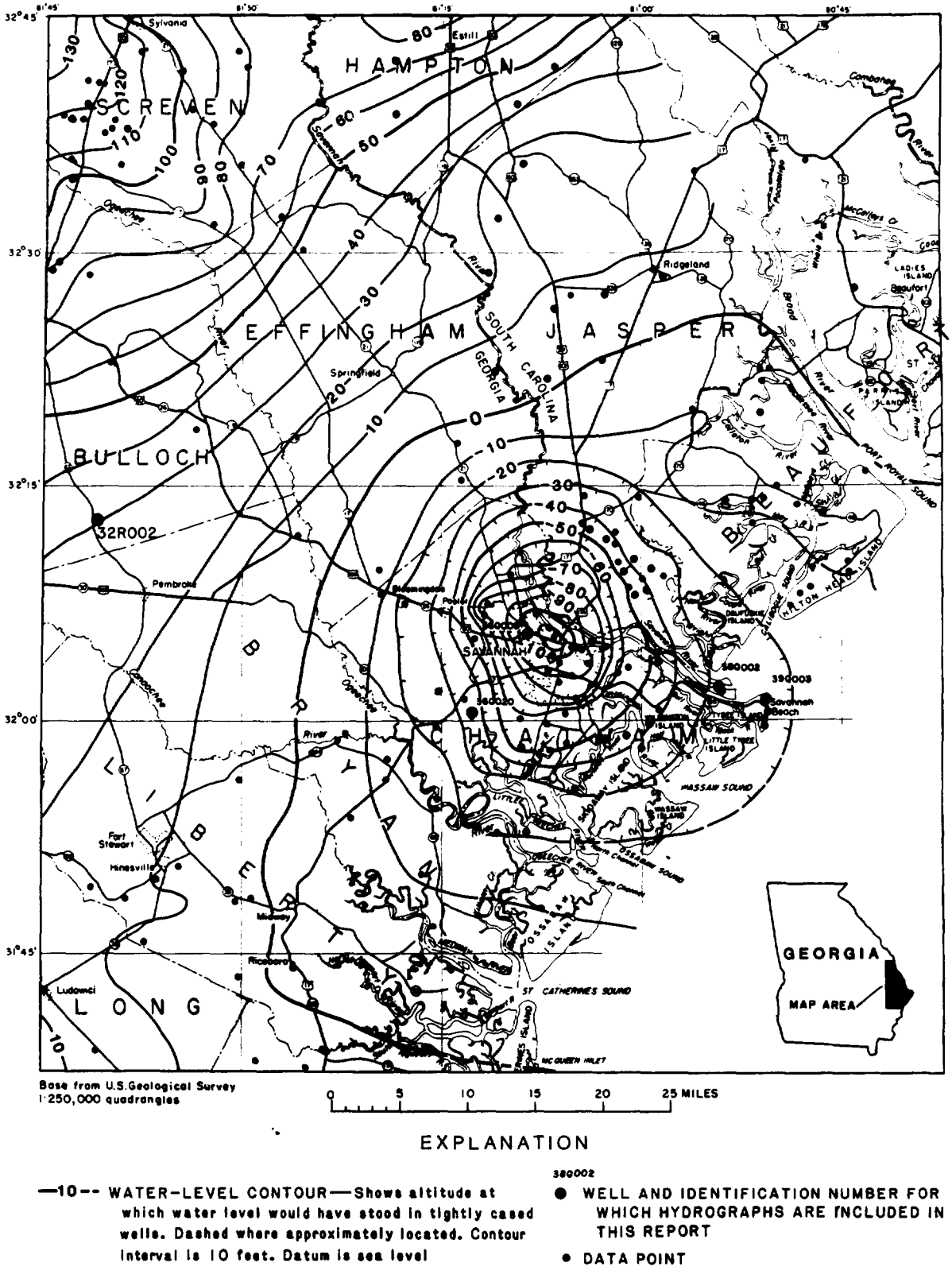


Figure 2.7.4.1-1.—Observation well locations and the water level in the Upper Floridan aquifer in the Savannah area, May 1985.

36Q008 LAYNE-ATLANTIC CHATHAM COUNTY

320530081085001 Local number, 36Q008.
LOCATION.--Lat 32°05'30", long 81°08'50", Hydrologic Unit 03060204, 0.19 mi southeast of intersection of Alfred Street and U.S. Highway 80.
Owner: Layne-Atlantic Co.
AQUIFER.--Upper Floridan aquifer.
WELL CHARACTERISTICS.--Drilled unused industrial well, diameter 4 in., depth 406 ft, cased to 250 ft, open hole.
DATUM.--Elevation of land-surface datum is 9.91 ft.
Measuring point: Top of 3-in. casing, 1.0 ft above land-surface datum.
REMARKS.--Water levels for period of missing record, January 28 to February 24, were estimated.
PERIOD OF RECORD.--February 1954 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 49.17 ft below land-surface datum, July 11, 1954; lowest, 124.40 ft below land-surface datum, August 30, 1980.

Water level, in feet below land surface, through calendar year 1986 daily mean values - monthly mean values

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	105.74	111.90	107.76	106.49	114.09	113.34	119.65	120.56	118.74	118.28	114.49	108.29
2	106.18	110.42	107.28	108.18	113.88	114.04	120.00	119.67	118.12	118.71	113.20	110.44
3	107.62	109.98	106.45	108.83	113.40	114.68	118.18	119.11	118.00	118.56	112.89	111.24
4	107.99	110.06	107.46	108.79	112.24	114.32	116.52	119.13	117.88	117.82	114.20	110.89
5	108.66	109.76	107.38	108.16	112.30	114.06	115.52	119.34	117.59	116.47	114.59	111.62
6	110.30	108.94	107.52	107.09	113.54	114.06	114.78	119.62	116.93	116.80	114.50	110.62
7	111.24	108.65	107.58	107.54	114.73	113.31	115.75	119.90	115.82	117.62	114.50	108.44
8	111.86	107.65	106.64	108.24	114.81	112.94	117.89	119.92	115.50	118.56	114.25	109.07
9	111.98	106.46	105.62	108.25	114.79	113.58	119.14	119.62	115.80	119.15	113.60	110.26
10	112.64	106.47	105.39	108.32	114.24	114.57	119.81	119.42	116.02	118.66	113.38	110.66
11	112.94	106.46	106.62	108.36	113.58	115.47	120.22	119.90	116.66	117.20	113.41	110.65
12	112.78	106.27	107.12	107.36	114.02	115.31	119.70	121.12	116.55	116.04	114.83	110.81
13	112.44	106.44	107.19	106.25	114.22	115.01	117.44	121.38	116.28	116.83	115.39	110.69
14	113.02	106.16	107.20	107.11	114.80	114.71	117.36	122.04	116.79	118.33	115.70	109.88
15	112.86	104.54	106.32	108.50	115.73	113.88	118.72	120.51	116.76	117.64	114.78	110.51
16	112.46	102.90	105.53	109.20	116.11	113.53	118.98	118.98	117.59	118.00	113.24	111.28
17	112.23	102.36	104.84	110.45	116.10	114.14	118.70	117.68	118.55	117.79	112.57	111.62
18	111.23	102.00	105.99	110.80	115.10	114.53	120.08	118.13	117.90	116.43	113.52	111.13
19	109.70	101.98	107.72	110.49	115.82	115.40	119.61	119.44	117.27	114.58	112.89	111.32
20	109.56	104.27	108.28	109.52	116.58	115.84	118.96	119.74	116.64	114.69	112.24	110.03
21	110.55	107.72	107.72	109.58	116.54	115.05	119.49	119.92	115.46	115.90	111.60	110.23
22	110.82	107.18	107.66	110.74	116.77	114.33	120.60	120.49	115.69	116.66	111.27	111.18
23	111.09	105.36	107.10	111.68	117.00	114.94	120.85	119.62	116.70	117.53	110.55	110.31
24	111.24	105.73	106.84	112.04	115.88	115.92	121.08	118.35	117.42	117.03	110.60	110.29
25	110.94	107.20	107.30	112.16	114.50	117.32	120.57	118.82	118.79	116.04	112.01	108.24
26	110.05	107.50	106.68	111.98	113.82	118.41	119.58	120.18	120.05	114.77	111.95	106.86
27	110.38	108.22	107.10	111.16	114.88	118.57	118.59	120.66	119.20	115.12	111.01	107.39
28	112.74	108.75	107.25	112.08	115.69	117.81	118.71	120.38	118.30	116.31	109.02	107.70
29	114.06	---	105.67	113.20	115.79	117.17	119.82	120.83	117.11	115.55	108.02	107.85
30	113.43	---	104.50	113.68	115.25	117.72	120.53	120.24	118.02	115.88	107.40	108.29
31	112.17	---	104.94	---	114.25	---	121.22	119.42	---	116.08	---	109.16
MEAN	111.00	106.83	106.73	109.54	114.85	115.13	118.97	119.81	117.27	116.94	112.72	109.90

CAL YR 1986 MEAN 113.36 HIGH 101.98 LOW 122.04

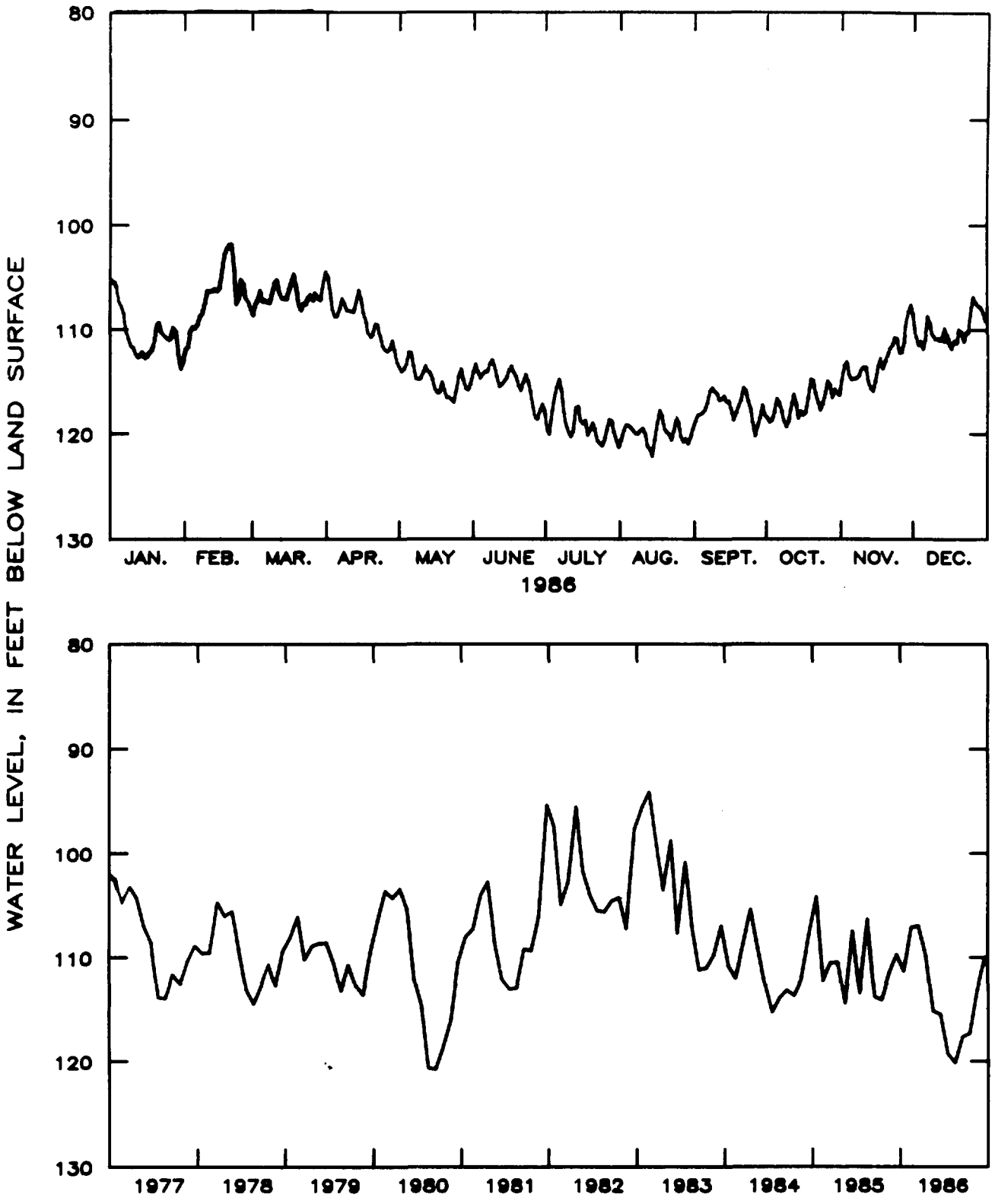


Figure 2.7.4.1—2.——Water level in observation well 36Q008, Chatham County.

36Q020 MORRISON CHATHAM COUNTY

320021081124801 Local number, 36Q020.
LOCATION.--Lat 32°00'18", long 81°12'48", Hydrologic Unit 03060204, 2.7 mi south of intersection of U.S. Highway 17 with Dean Forest Road.
Owner: H. J. Morrison.
AQUIFER.--Upper Floridan aquifer.
WELL CHARACTERISTICS.--Drilled unused domestic well, diameter 3 in., depth 365 ft, cased to 330 ft, open hole.
DATUM.--Elevation of land-surface datum is 13 ft.
Measuring point: Floor of recorder shelter, 3.88 ft above land-surface datum.
REMARKS.--Water levels for periods of missing record, January 27 to February 24, March 1-13, May 5-26, and September 1-24, were estimated.
PERIOD OF RECORD.--March 1958 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 17.66 ft below land-surface datum, June 28, 1958; lowest, 54.45 ft below land-surface datum, July 23, 1986.

Water level, in feet below land surface, through calendar year 1986 daily mean values - monthly mean values

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	47.42	47.97	46.37	46.80	49.18	51.66	52.71	54.11	53.49	52.61	51.46	49.27
2	47.33	47.92	46.49	46.80	49.44	51.63	52.86	54.18	53.42	52.60	51.33	49.17
3	47.23	47.75	46.38	46.93	49.62	51.64	52.96	54.30	53.36	52.64	51.22	49.24
4	47.19	47.64	46.33	47.12	49.76	51.64	53.16	54.34	53.29	52.66	51.07	49.33
5	47.16	47.40	46.44	47.24	49.94	51.56	53.37	54.27	53.19	52.72	50.94	49.32
6	47.28	47.25	46.27	47.30	50.03	51.41	53.37	54.26	53.16	52.82	50.96	49.31
7	47.25	47.28	46.42	47.35	50.12	51.30	53.37	54.24	53.17	52.87	51.01	49.27
8	47.36	47.12	46.41	47.10	49.60	51.37	53.37	54.22	53.18	52.86	50.97	49.22
9	47.42	47.07	46.45	47.10	49.14	51.74	53.37	54.24	53.17	52.82	50.93	49.11
10	47.16	46.96	46.50	47.16	49.12	51.66	53.64	54.24	53.00	52.72	50.93	48.99
11	47.08	46.65	46.53	47.17	49.32	51.65	53.76	54.25	53.03	52.73	50.81	48.87
12	47.16	47.13	46.54	47.20	49.37	51.62	53.82	54.27	52.94	52.68	50.76	48.85
13	47.10	47.36	46.48	47.26	49.09	51.60	53.83	54.18	52.95	52.56	50.80	49.04
14	47.18	47.26	46.36	47.35	49.04	51.68	53.84	54.09	53.00	52.46	50.87	49.03
15	47.38	47.14	46.36	47.39	48.67	51.80	53.84	54.02	52.96	52.45	50.70	48.92
16	47.44	47.06	46.36	47.38	49.51	51.78	53.84	53.95	52.88	52.37	50.64	48.83
17	47.36	46.93	46.39	47.44	49.86	51.68	53.86	53.94	52.87	52.37	50.52	48.75
18	47.20	46.85	46.42	47.54	49.67	51.50	53.96	53.94	52.84	52.38	50.36	48.65
19	46.98	46.70	46.43	47.76	49.63	51.45	54.05	53.94	52.80	52.38	50.38	48.74
20	47.07	46.70	46.46	47.66	49.58	51.42	54.10	53.95	52.76	52.30	50.22	48.70
21	47.14	46.65	46.48	47.61	49.75	51.38	54.20	54.02	52.70	52.18	50.29	48.78
22	47.10	46.61	46.60	47.78	50.09	51.42	54.38	54.01	52.64	52.12	50.26	48.82
23	47.00	46.44	46.66	47.91	50.56	51.49	54.45	53.93	52.58	52.07	50.20	48.60
24	46.96	46.37	46.60	48.02	50.92	51.56	54.33	53.87	52.52	51.98	50.15	48.39
25	46.86	46.34	46.75	48.03	51.16	51.58	54.24	53.90	52.56	51.79	50.04	48.52
26	46.52	46.22	46.70	48.10	51.40	51.73	54.27	53.93	52.61	51.67	49.87	48.55
27	47.16	46.13	46.60	48.28	51.70	51.92	54.22	53.90	52.58	51.64	49.81	48.46
28	47.80	46.28	46.58	48.54	51.86	52.06	54.14	53.85	52.63	51.72	49.74	48.43
29	48.00	---	46.74	48.76	51.96	52.18	54.11	53.80	52.69	51.66	49.57	48.32
30	48.00	---	46.75	49.02	51.87	52.43	54.13	53.66	52.67	51.52	49.35	48.19
31	48.02	---	46.76	---	51.76	---	54.14	53.61	---	51.49	---	48.14
MEAN	47.27	46.97	46.50	47.57	50.09	51.65	53.80	54.05	52.92	52.32	50.54	48.83

CAL YR 1986 MEAN 50.23 HIGH 46.13 LOW 54.45

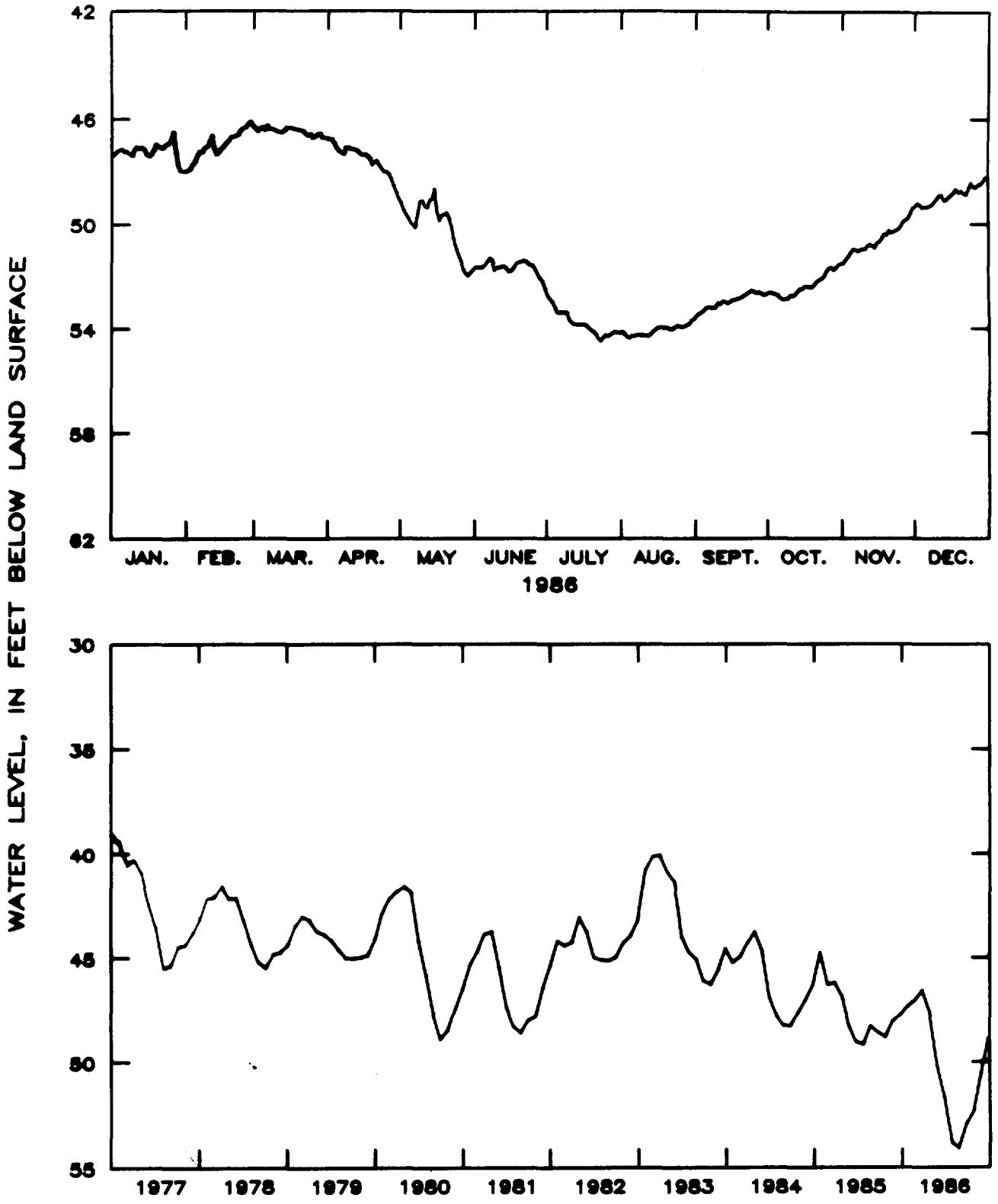


Figure 2.7.4.1–3.––Water level in observation well 36Q020, Chatham County.

380002 PILOT HOUSE CHATHAM COUNTY

320202080541201 Local number, 380002.
LOCATION.--Lat 32°02'02", long 80°54'12", Hydrologic Unit 03060204, Cockspur Island, near pilot house.
Owner: U.S. Department of the Interior, National Park Service.
AQUIFER.--Upper Floridan aquifer.
WELL CHARACTERISTICS.--Drilled observation well, diameter 8 in., depth 348 ft, cased to 110 ft, open hole.
DATUM.--Elevation of land-surface datum is 8.0 ft.
Measuring point: Floor of recorder shelter, 3.62 ft above land-surface datum.
REMARKS.--Borehole geophysical survey conducted June 16, 1961.
PERIOD OF RECORD.--February 1956 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 16.00 ft below land-surface datum, March 5, 1956; lowest, 38.48 ft below land-surface datum, August 4, 1986.

Water level, in feet below land surface, through calendar year 1986 daily mean values - monthly mean values

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	33.35	33.29	32.38	32.56	33.96	35.78	36.47	38.15	37.13	37.06	36.19	34.39
2	33.18	33.24	32.44	32.47	34.26	35.86	36.61	38.25	37.00	37.09	36.11	34.56
3	33.27	33.10	32.48	32.58	34.30	35.59	36.63	38.45	37.02	37.11	35.93	34.89
4	33.22	32.99	32.37	32.74	34.54	35.60	36.50	38.48	36.92	37.16	35.85	34.91
5	33.14	32.89	32.43	32.85	34.70	35.50	36.77	38.33	36.81	37.23	35.84	34.79
6	33.27	32.84	32.40	32.96	34.81	35.46	36.96	38.29	36.73	37.19	36.00	34.71
7	33.22	32.88	32.49	33.02	34.84	35.64	37.01	38.27	36.73	37.15	36.08	34.65
8	33.05	32.80	32.41	32.75	34.70	35.81	37.05	38.28	36.82	37.19	36.04	34.55
9	33.20	32.68	32.52	32.86	34.40	35.87	37.11	38.32	36.83	37.28	36.03	34.38
10	33.00	32.56	32.54	32.80	34.49	35.82	37.23	38.34	36.87	37.18	35.96	34.25
11	32.61	32.67	32.51	32.87	34.56	35.88	37.21	38.36	36.93	36.94	35.77	34.04
12	32.86	32.90	32.52	32.92	34.62	35.97	37.28	38.30	36.93	36.88	35.83	34.01
13	33.03	33.01	32.44	32.88	34.57	36.10	37.45	38.20	36.83	36.80	35.80	34.03
14	33.02	32.85	32.35	33.00	34.69	36.04	37.45	38.14	36.66	36.79	35.69	33.88
15	33.05	32.80	32.43	32.94	34.73	35.98	37.34	37.96	36.68	36.78	35.63	33.81
16	33.16	32.68	32.43	33.06	34.81	36.00	37.32	37.74	36.64	36.63	35.65	33.73
17	33.16	32.60	32.46	33.14	34.88	36.00	37.33	37.75	36.41	36.77	35.57	33.59
18	33.00	32.50	32.41	33.15	34.94	35.72	37.35	37.81	36.53	36.64	35.41	33.74
19	32.80	32.38	32.41	33.05	35.02	35.50	37.31	37.72	36.69	36.66	35.32	---
20	32.96	32.33	32.48	33.10	34.97	35.50	37.23	37.70	36.79	36.62	35.11	---
21	32.94	32.38	32.38	33.12	34.78	35.38	37.39	37.87	36.88	36.59	35.38	---
22	32.68	32.34	32.52	33.22	34.80	35.42	37.57	37.91	36.83	36.60	35.26	---
23	32.58	32.22	32.58	33.20	34.90	35.63	37.69	37.74	36.74	36.58	35.22	---
24	32.50	32.14	32.58	33.20	35.11	35.78	37.75	37.65	36.84	36.62	35.31	---
25	32.44	32.18	32.53	33.21	35.18	35.80	37.79	37.54	37.03	36.45	35.29	---
26	32.36	32.13	32.41	33.20	35.31	35.82	37.94	37.66	36.98	36.36	35.16	---
27	32.84	32.28	32.28	33.36	35.51	35.97	38.03	37.76	37.07	36.37	35.26	---
28	33.12	32.30	32.28	33.60	35.58	36.11	38.06	37.79	36.99	36.52	35.04	---
29	33.10	---	32.48	33.64	35.73	36.25	38.09	37.37	36.93	36.46	34.87	---
30	33.21	---	32.52	33.80	35.76	36.39	38.10	37.32	37.05	36.27	34.57	---
31	33.27	---	32.53	---	35.81	---	38.08	37.32	---	36.09	---	---
MEAN	32.99	32.64	32.45	33.04	34.88	35.81	37.36	37.96	36.84	36.78	35.57	34.27

CAL YR 1986 MEAN 35.10 HIGH 32.13 LOW 38.48

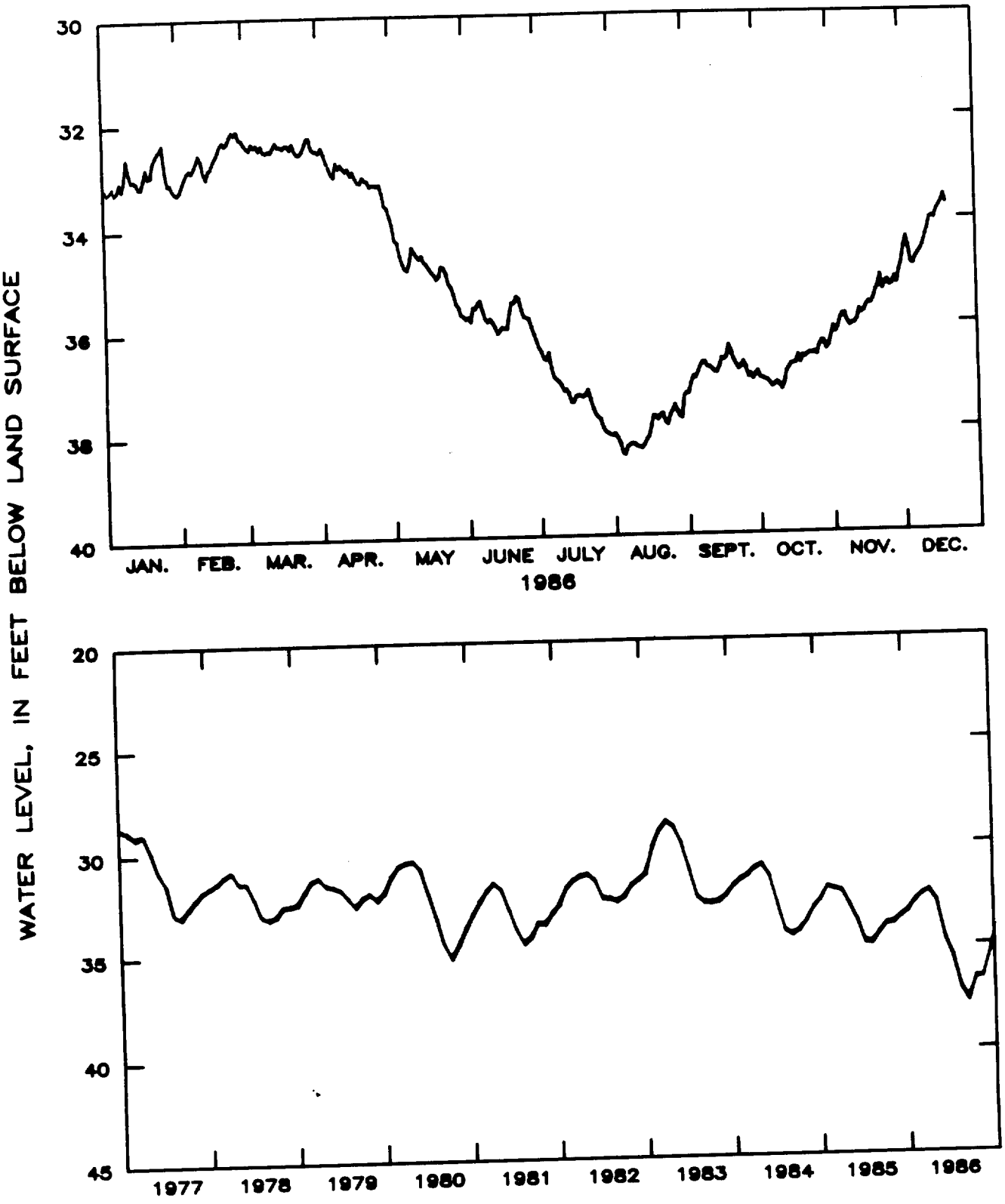


Figure 2.7.4.1–4.--Water level in observation well 38Q002, Chatham County.

39Q003 TEST WELL 7 CHATHAM COUNTY

320122080510202 Local number, 39Q003.
LOCATION.--Lat 32°01'22", long 80°51'02", Hydrologic Unit 03060204, Tybee Island near Fort Screven.
Owner: U.S. Geological Survey, test well 7.
AQUIFER.--Upper Floridan aquifer.
WELL CHARACTERISTICS.--Drilled observation well, diameter 10 in., depth 600 ft, cased to 129 ft, open hole.
DATUM.--Elevation of land-surface datum is 7.0 ft.
Measuring point: Top of 10-in. casing, 2.0 ft above land-surface datum.
REMARKS.--Borehole geophysical survey conducted January 24, 1962. Water levels for periods of missing record, January 15-24, April 25-30, May 1-12, and June 14-25, were estimated.
PERIOD OF RECORD.--May 1952 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 17.80 ft below land-surface datum, April 11, 1963; lowest, 34.33 ft below land-surface datum, August 3, 1986.

Water level, in feet below land surface, through calendar year 1986 daily mean values - monthly mean values

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	27.56	27.66	26.72	26.90	28.83	31.54	32.48	33.96	32.76	32.95	31.93	30.32
2	27.55	27.63	26.95	26.94	29.21	31.69	32.67	34.00	32.53	32.90	31.90	30.68
3	27.80	27.45	26.98	27.08	29.34	31.27	32.63	34.33	32.59	32.97	31.75	31.14
4	27.64	27.27	26.35	27.24	29.66	31.12	32.43	34.31	32.44	33.14	31.58	31.21
5	27.43	27.16	26.89	27.40	29.91	31.17	32.66	34.10	32.34	33.23	31.67	31.07
6	27.61	27.14	26.90	27.59	30.10	31.32	32.74	34.08	32.25	33.09	31.83	31.05
7	27.44	27.36	26.98	27.55	30.21	31.70	32.88	33.98	32.41	32.88	31.98	30.78
8	26.96	27.20	26.91	27.08	30.16	31.93	32.97	34.14	32.35	32.72	32.01	30.75
9	27.25	27.02	27.16	27.16	29.94	31.99	33.09	34.31	32.39	32.83	32.08	30.64
10	27.50	26.90	27.02	27.06	30.12	31.83	33.14	34.32	32.46	32.79	31.78	30.63
11	27.47	27.12	27.09	27.18	30.27	31.94	33.04	34.20	32.56	32.38	31.50	30.50
12	27.42	27.31	26.99	27.38	30.32	32.04	33.21	33.90	32.61	32.36	31.65	30.43
13	27.50	27.40	26.92	27.32	30.45	32.04	33.41	33.71	32.68	32.31	31.59	30.60
14	27.50	27.21	26.78	27.16	30.44	31.99	33.40	33.74	32.35	32.36	31.44	30.27
15	27.51	27.24	26.86	27.02	30.74	31.93	33.29	33.73	32.28	32.39	31.44	30.17
16	27.59	27.06	26.83	27.42	30.77	31.96	33.34	33.53	32.22	32.24	31.52	30.27
17	27.57	26.90	26.90	27.57	30.96	31.96	33.38	33.63	31.93	32.27	31.45	30.08
18	27.39	26.81	26.84	27.55	30.99	31.69	33.42	33.74	32.14	32.29	31.24	29.92
19	27.17	26.74	26.84	27.44	30.78	31.47	33.42	33.59	32.32	32.48	31.12	30.05
20	27.30	26.62	26.96	27.49	30.63	31.48	33.28	33.49	32.63	32.38	30.87	29.85
21	27.26	26.46	26.76	27.28	30.70	31.36	33.40	33.61	32.69	32.26	31.25	29.79
22	26.98	26.70	26.90	27.43	30.78	31.41	33.42	33.70	32.53	32.27	31.12	29.79
23	26.86	26.56	27.05	27.58	30.99	31.62	33.58	33.55	32.40	32.34	31.09	29.54
24	26.75	26.56	27.05	27.48	31.34	31.78	33.70	33.44	32.50	32.32	31.26	29.70
25	26.67	26.58	27.10	27.57	31.44	31.80	33.58	33.03	32.71	32.13	31.26	30.01
26	26.70	26.51	27.04	27.65	31.38	31.83	33.66	33.31	32.94	32.02	31.30	30.05
27	27.72	26.84	26.94	27.89	31.39	32.07	33.79	33.47	32.97	32.05	31.16	29.66
28	28.44	26.78	27.00	28.22	31.45	32.20	33.82	33.45	32.87	32.27	30.95	29.65
29	28.12	---	26.90	28.34	31.47	32.35	33.84	32.81	32.64	32.20	30.70	29.57
30	27.69	---	27.04	28.59	31.25	32.42	33.85	32.92	32.67	31.97	30.38	29.66
31	27.71	---	27.06	---	31.45	---	33.87	32.97	---	31.76	---	29.45
MEAN	27.42	27.01	26.93	27.45	30.56	31.76	33.27	33.71	32.51	32.47	31.43	30.23

CAL YR 1986 MEAN 30.42 HIGH 26.35 LOW 34.33

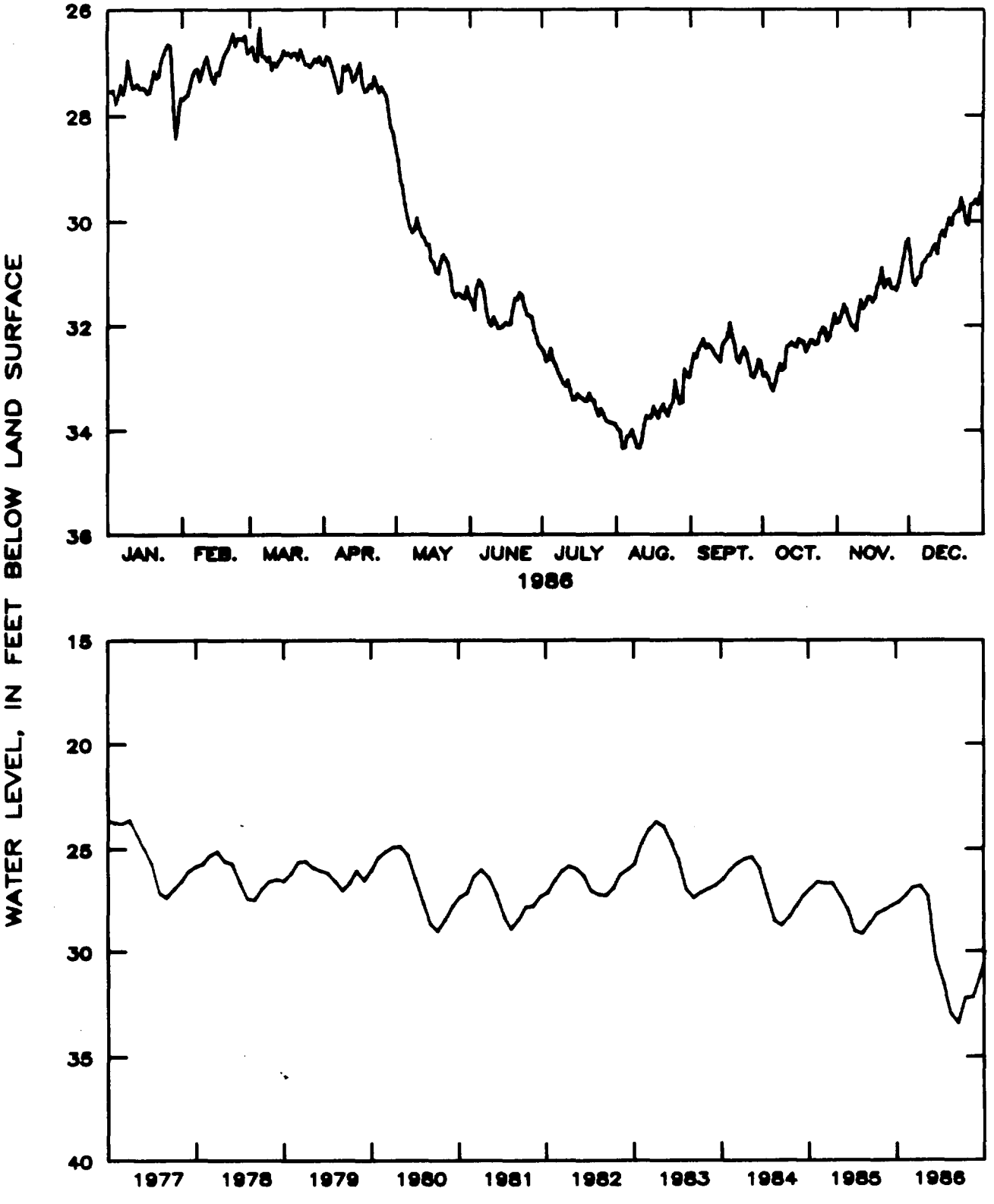


Figure 2.7.4.1–5.--Water level in observation well 39Q003, Chatham County.

3.0 GROUND-WATER QUALITY

Water samples are collected periodically throughout Georgia and analyzed as part of areal and regional ground-water studies. Wells along the coast have been monitored for chloride concentration since the late fifties. Chloride is indicative of saltwater contamination and is readily analyzed in the field. Selected wells in the water-level monitoring networks also are pumped and sampled periodically to note any changes in water quality that may occur in the various aquifers of the State.

Where water-quality problems are noted, or are considered likely to occur, samples are collected more frequently and analyzed for water-quality constituents indicative of the problem. Streams also are sampled for water quality in those areas where the stream water recharges an aquifer. Ground-water pumping can induce water-quality problems that otherwise might not have occurred.

3.1 Savannah area

Ground-water pumpage, totaling about 73 Mgal/d in the Savannah area, has lowered the water level in the Floridan aquifer system to about 120 feet below sea level in the cone of depression. Eleven wells in the Savannah area are pumped and sampled periodically to monitor changes in chloride concentration in the area. There has been no increase in chloride concentration in these 11 wells during the past 20 years.

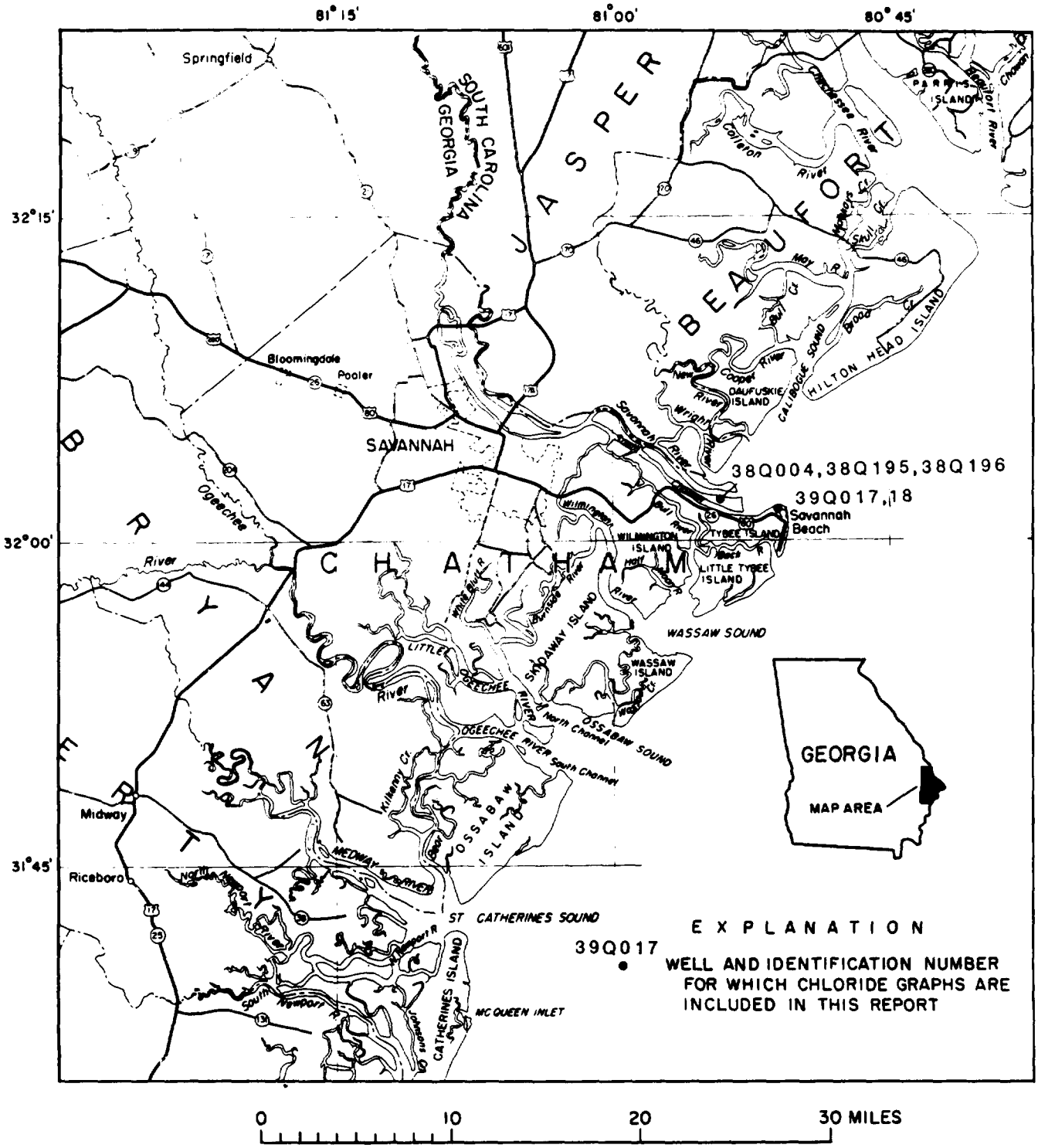


Figure 3.1-1.—Locations of chloride-monitoring wells in the Savannah area.

Reference No. 8

NUS CORPORATIC... ... **TELECON NOTE**

CONTROL NO:	DATE:	TIME:
	April 8, 1988	1045

DISTRIBUTION:

BETWEEN:	OF:	PHONE:
Robert B. Randolph (Hydrologist)	U.S. Geological Survey Doraville, Georgia	(404) 331-4858

AND:

John Jenkins, NUS Corporation

DISCUSSION:

The Hawthorn Formation is a competent confining unit in the Savannah area. The Hawthorn Formation contains local sand lenses which contains water under artesian conditions. There is a large cone of depression in Savannah with a very steep gradient. The cone of depression creates a downward component in the surficial aquifer. "There is definitely recharge to the principal artesian aquifer from above the cone of depression." The annual recharge of the principal artesian aquifer from the surficial aquifer is small, 0.2 inches to 0.5 inches using 1980 data. This recharge is a result of the cone of depression. The top of the principal artesian aquifer is approximately 140 feet below land surface. The surficial aquifer is approximately 80 feet thick or less. The transmissivity of the principal artesian aquifer ranges from 25000 to 50000 ft^2/day. The Hawthorn Formation is approximately 120 feet thick and thickens to the west.

ACTION ITEMS:

"Rite in the Rain."
WEATHERPROOF

LEVEL

NOTEBOOK NO. 311

F4-1056 Hercules Disposal

Savannah, Chatham County, Ga.

F4-8809-05

Site Recon

Janet H Martin

LOGBOOK REQUIREMENTS
REVISED - JANUARY 6, 1988

NOTE: ALL LANGUAGE SHOULD BE FACTUAL AND OBJECTIVE

1. Record on front cover of the Logbook:

   TDD No., Site Name, Site Location, Project Manager

2. All entries are made using ink.

3. Provide statement referencing Equipment Location Log.

4. Statement of Work Plan, Study Plan, and Safety Plan discussion and distribution to field team with team member signatures.

5. Sign and date each page. Project Manager is to review and sign off on each logbook daily.

6. A single line is drawn through error. Each correction is dated/initialed.

7. Report weather conditions. Provide general site description and remarks.

8. Document all changes from project planning documents.

9. Provide a site sketch with sample locations.

10. Document all calibration and pre-operational checks of equipment.

11. Provide reference to Sampling Field Sheets for detailed sampling information.

12. Maintain photo log by completing the stamped information at the end of the logbook.

13. If no site representative is on hand to accept the receipt for samples an entry to that effect must be placed in the logbook.

A site recon was performed at Hercules Disposal, Savannah, Ga by Lisa Ramey and Janet Martin on September 28, 1988

All entries in this logbook will be made and/or reviewed by myself Janet Martin with each page being signed and dated.

J Martin

Onsite Pathway/General Considerations

- Confirm the location of the site on topographic map(s).
- How accessible is the site to non-employees?
- How accessible is the waste itself?
- Is there visible damage on surrounding areas - i.e., to flora, fauna, or off-site property?
- Are there persons residing or going to school onsite?
- Determine distance and direction from the site to the nearest residence, school, or day-care facility.
- Make an overview of population density within a one-mile radius of the site.

Groundwater Route

- Distance to the nearest well?
- Are there wells close enough to the site for future sampling (SSI phase)?
- Are there public supplies with wells in the 4-mile radius?
  - Obtain depths, locations, distribution areas, populations served.
  - Obtain well logs, if available.
- Locate private wells within 4 miles and determine depths.
- Are there persons drinking groundwater with no alternate uncontaminated source readily available?
- Is groundwater used for irrigation?
  - Determine type of crops and estimate of acreage.

Surface Water Route

- Is there surface water onsite?
- Is there visible evidence of leachate or direct surface water discharge?
- Make a review of potential and actual surface water migration pathways from the site, overland and in-water. (Confirm "lay of the land" shown on topo.)
- Is surface water used for drinking, recreation, or irrigation?
- Determine location of intake(s) if drinking or irrigation use exists.
- Distance limit in flowing water is 15 stream miles from probable point of entry into surface water (2 mile overland limit).
- Distance limit for static water intakes is also 15 miles from probable point of entry.
- Are there wetlands in the vicinity of the site?
- Are there drainage areas upgradient of the site?

Hercules Disposal supposedly located on Old Louisville Road.

Not obvious in location

Go to Chatham County Tax Assessor office locate plot which Hercules pays taxes on.

Pin # 2-715-3-3

Deed 126 T 474

Hercules Disposal could not be located.

Janet S Martin
2-10-88

2

2

This log book was transferred to Geof Carton on 10-10-88 by me Janet G. Martin. Additional information on this facility has been obtained and a second recon scheduled.

Janet G Martin
Geof Carton

I have read and understood the Phase I. work plan for the Hercules, Inc. Disposal facility in Savannah, Chatham County, Georgia.

Mitch Cohen

Geof Carton

4

10/26/88

10:15 arrived at City of Savannah Water Dept. to meet with Ron Collins. Weather is clear cool and mild.

Ron Collins helped us mark City well locations and gave us copies of well information. Ron also helped mark boundaries of distribution for the City water system. on quad maps.

He told us that the industrial supply system was taken from surface water - Abercorn Creek

all well water is chlorinated, fluorinated and sent into distribution system.

well # 26 is rarely used - only a backup.

well #28 is not developed

Janet G. Martin Mitch Cohen

5

11.15 10/26/88

Well #29 & 30 are tied together

well depths range between 400 and 700 feet and are cased 200 - 300 feet casings are double with concrete pumped in as barrier.

paper mills are a large draw on groundwater

distribution systems and well locations have been marked on master topo's during previous recons

Water from the Savannah industrial system is used to supplement the Savannah Municipal system during peak summer water usage (about 1 week per year).

[illegible signature] Geof Canton

14:45 10/26/88

We located Foundation Drive and drove length of it. There are only industries located along the road. We stopped at the Johns Manville Guard kiosk and asked if Hercules was on road. It is not. Johns Manville is located at the Hercules address. We could not see the entire property from the road. The plant produces roofing materials. A large part of the property seems to be covered with buildings or is paved. No stressed vegetation was seen. Much of the property is surrounded by barbed wire topped fence in good repair. Much of the property was not visible from the road.

Geof Canton

Tennessee Pharmaceutical Company
Plant #3
N

10/26/95

We drove up & down nearby streets to identify well locations. None were found.

Not Located

OVERSIZED

DOCUMENT

Federal Reporting Data
Community and non-community
Region 4 Drinking Water Office (Atlanta: November 1, 1988).

t for the state of Georgia,
printout obtained from EPA

GA 31403 GA 31403
- - REGION: DISTRICT: TOT VIOL: 0
TYPE: C PRIMARY SOURCE: G ACTIVE: A POP SERVED: 30

SOURCE NAME	T Y P	A V A L	W E L	BASN	LAT / LONG	A P C S F C S T I A F D O E C O E I O O A R M L I T R L A D L R F S N M A S H
DRILLED	WE	G	P			
DRILLED	WE	G	P			

PWS-ID: GA0510000 FISCAL YR: 03
PLANT NAME/ADDRESS
[redacted]
P.O. BOX 7548
GARDEN CITY
GA 31418
OWNER NAME/ADDRESS
CITY OF GARDEN CITY
P.O. BOX 7548
GARDEN CITY
GA 31418
- - REGION: DISTRICT: TOT VIOL: 0
TYPE: C PRIMARY SOURCE: G ACTIVE: A [redacted]

SOURCE NAME	T Y P	A V A L	W E L	BASN	LAT / LONG	A P C S F C S T I A F D O E C O E I O O A R M L I T R L A D L R F S N M A S H
DRILLED	WE	G	P			
DRILLED	WE	G	P			

PWS-ID: GA0510001 FISCAL YR: 03
PLANT NAME/ADDRESS
CITY OF POOLER
PO BOX 767
POOLER
GA 31322
OWNER NAME/ADDRESS
CITY OF POOLER
PO BOX 767
POOLER
GA 31322
- - REGION: DISTRICT: TOT VIOL: 0
TYPE: C PRIMARY SOURCE: G ACTIVE: A POP SERVED: 3,160

SOURCE NAME	T Y P	A V A L	W E L	BASN	LAT / LONG	A P C S F C S T I A F D O E C O E I O O A R M L I T R L A D L R F S N M A S H
DRILLED	WE	G	P			

PWS-ID: GA0510002 FISCAL YR: 03
PLANT NAME/ADDRESS
[redacted]
P. O. BOX 4086
PORT WENWORTH
GA 31407
OWNER NAME/ADDRESS
CITY OF PORT WENTWORTH
P. O. BOX 4086
PORT WENWORTH
GA 31407
- - REGION: DISTRICT: TOT VIOL: 0
TYPE: C PRIMARY SOURCE: G ACTIVE: A [redacted]

SOURCE NAME	T Y P	A V A L	W E L	BASN	LAT / LONG	A P C S F C S T I A F D O E C O E I O O A R M L I T R L A D L R F S N M A S H
DRILLED	WE	G	P			

DRILLED WE G P

PWS-ID: GA0510100 FISCAL YR: 03

PLANT NAME/ADDRESS	OWNER NAME/ADDRESS
BETHSEDA HOME FOR BOYS	BETHSEDA HOME FOR BOYS
P. O. BOX 13039	P. O. BOX 13039
SAVANNAH	SAVANNAH
GA 31406	GA 31406

- - REGION: DISTRICT: TOT VIOL: 1

TYPE: C PRIMARY SOURCE: G ACTIVE: A POP SERVED: 60

SOURCE NAME	T Y P	A V A L	W E BASN	LAT / LONG	A R L	P E A	C O D	S I L	F O R	C O F	S I S	T N N	I T M	A A A	F L S	D I	O T H

DRILLED WE G P

PWS-ID: GA0510102 FISCAL YR: 03

PLANT NAME/ADDRESS	OWNER NAME/ADDRESS
[redacted]	CITY OF SAVANNAH-TRAVIS FIELD
P. O. BOX 1027	P. O. BOX 1027
SAVANNAH	SAVANNAH
GA 31402	GA 31402

- - REGION: DISTRICT: TOT VIOL: 0

TYPE: C PRIMARY SOURCE: G ACTIVE: A [redacted] SERVED: [redacted]

SOURCE NAME	T Y P	A V A L	W E BASN	LAT / LONG	A R L	P E A	C O D	S I L	F O R	C O F	S I S	T N N	I T M	A A A	F L S	D I	O T H

DRILLED WE G P

DRILLED WE G P

PWS-ID: GA0510103 FISCAL YR: 03

PLANT NAME/ADDRESS	OWNER NAME/ADDRESS
LAKESIDE MOBILE HOME PARK	LAKESIDE MOBILE HOME PARK
4504 OGEECHEE ROAD	4504 OGEECHEE ROAD
SAVANNAH	SAVANNAH
GA 31405	GA 31405

- - REGION: DISTRICT: TOT VIOL: 0

TYPE: C PRIMARY SOURCE: G ACTIVE: A POP SERVED: 83

SOURCE NAME	T Y P	A V A L	W E BASN	LAT / LONG	A R L	P E A	C O D	S I L	F O R	C O F	S I S	T N N	I T M	A A A	F L S	D I	O T H

DRILLED WE G P

PWS-ID: GA0510106 FISCAL YR: 03

PLANT NAME/ADDRESS	OWNER NAME/ADDRESS
MATHEWS MOBILE HOME PARK	MATHEWS MOBILE HOME PARK
733 E. DERENNE AVE.	733 E. DERENNE AVE.
SAVANNAH	SAVANNAH
GA 31406	GA 31406

- - REGION: DISTRICT: TOT VIOL: 0

TYPE: C PRIMARY SOURCE: G ACTIVE: A POP SERVED: 65

CHATHAM COUNTY
DEPARTMENT OF PUBLIC WORKS
P.O. BOX 8161
SAVANNAH, GEORGIA 31412

November 9, 1988

Geoffrey Carton, Biologist
NUS CORPORATION
1927 Lakeside Parkway
Suite 614
Tucker, Georgia 30084

SUBJECT: County Water Service

Dear Mr. Carton:

I can not locate the drilling logs for our wells. There was considerable moving of records in the last few weeks and I do not have them available to me at this time. All of our wells are cased to the Ocala Aquafer.

Chatham County can obtain water from only one other source. Savannah Ports Authority is tied into the City of Pooler system, through a series of pressure valves. We can help Pooler or they can help us. This system could be used in some disaster situations, such as a storm or major fire.

Our systems are as follows:

GLEN OF ROBIN HOOD - 4 wells, all in automatic mode, 1100 meters.

MODENA ISLAND - 1 well, 2 meters (approved for 54). This is a new very exclusive subdivision.

RUNAWAY POINT	- 1 well	99 meters
MONTGOMERY	- 2 wells	277 meters
BURROUGHS	- 1 well	105 meters
LITTLE NECK PLANTATION	- 1 well	32 meters
HUNTERS RIDGE	- 1 well	25 meters
SAVANNAH PORTS AUTHORITY	- 2 wells	7 industrial meters

Sincerely,

Robert B. Dawson, Superintendent
Chatham County Water & Sewer Dept.

NUS CORPORATION AND SUBSIDIARIES **TELECON NOTE**

CONTROL NO.	DATE: October 18, 1988	TIME: 9:30

DISTRIBUTION:

File
Chatham County, Georgia

BETWEEN: Dennis Lowe	OF: Lowes Well Drilling	PHONE: (912) 355-7000

AND: Geoffrey Carton, NUS Corporation

DISCUSSION:

He reported that shallow wells for potable water are illegal in Chatham County, but shallow wells for sprinkler systems and such are allowed in some areas. In general potable wells are cased to 300' with 100' of open hole. AC

ACTION ITEMS:

NUS CORPORATION AND SUBSIDIARIES — **TELECON NOTE**

CONTROL NO:	DATE:	TIME:
	4-11-88	13:47 hrs.

DISTRIBUTION:

BETWEEN:	OF:	PHONE:
Sgt. Tim Vincint Conservation Sargent	GA Game & Fish Division	(912) 727-2111

AND: Steve Walker - NUS Corp.

DISCUSSION:

I called Sgt. Vincint to inquire about fishing on the Savannah River. Sgt. Vincent stated that there is year-round recreational fishing on the Savannah River all the way from the I-95 overpass to the ocean. Sgt. Vincent stated that most recreational fishing is for bream (a food species) and this occurs on tributaries of the main channel of the Savannah River (the river divides into 3 channels below Savannah). There is also a commercial shad fishery on the river from January 1 to March 31 each year between the I-95 overpass and the mouth of the Savannah River. Shad roe is considered to be a delicacy.

ACTION ITEMS:

NUS CORPORATION AND SUBSIDIARIES **TELECON NOTE**

CONTROL NO.	DATE: November 21, 1988	TIME: 8:45

DISTRIBUTION:

File
Chatham County, Georgia

BETWEEN: Dennis Schmidt, Fisheries Biologist	OF: Georgia - DNR	PHONE: (912) 651-2222

AND: Geoffrey Carton, NUS Corporation

DISCUSSION:

He thinks it unlikely that there is any fishing in Savannah area canals.

The Savannah River in the city is designated for navigation only, but will be upgraded to fishing in the future.

The barrow pits near Sharon Park are used for recreation and probably some fishing.

All the coastal rivers and creeks are used for recreational fishing. Some are used for commercial fishing also (i.e. Wilmington River for crabs).

The Shortnosed Sturgeon is known to spawn in the Savannah area. It is endangered. gc

ACTION ITEMS:

NUS CORPORATION AND SUBSIDIARIES **TELECON NOTE**

CONTROL NO.	DATE: December 21, 1988	TIME: 1545

DISTRIBUTION:

File
Chatham County, Georgia

BETWEEN: Gordon Rogers	OF: GA Dept. of Natural Resources	PHONE: (912) 264-0542

AND: Geoffrey Carton, NUS Corporation

DISCUSSION:

Mr. Rogers collects the commercial fish landings for the Georgia Coastal areas. He reports that there is a commercial Shad fishery on the Savannah River within the city of Savannah. He also reports that there are from one to three commercial crabbers working the Wilmington River. The Wilmington River is a breeding ground for shrimp harvested offshore. GC

ACTION ITEMS:

CRITERION VARIABLE WEIGHT

VARIABLE	VALUE	LABEL	SUM	CASES
OFFSHORE	2	3-12 miles offshore	11021.0000	4
SPECIES	1081	Black Drum	527.0000	1
SPECIES	1235	Flounder	399.0000	1
SPECIES	1970	King Whiting	10095.0000	2
WATER	29	St Catherines Sound	363128.000	11
OFFSHORE	0		363128.000	11
SPECIES	7000	Blue Crab (hard shell)	363128.000	11
COUNTY	5	Bullock Co.	388.0000	5
WATER	9	Ogeechee River	388.0000	5
OFFSHORE	0		388.0000	5
SPECIES	3471	Buck Shad	42.0000	2
SPECIES	3472	Roe shad	346.0000	3
COUNTY	7	Camden Co.	303947.000	72
WATER	3	Cumberland Sound	8929.0000	30
OFFSHORE	0		8929.0000	30
SPECIES	7000	Blue crab	1000.0000	1
SPECIES	7510		3593.0000	26
SPECIES	7896	Oyster	4336.0000	3
WATER	13	St Andrews Sound	202578.000	18
OFFSHORE	0		202578.000	18
SPECIES	7000	Blue Crab	202483.000	17
SPECIES	7510		95.0000	1
WATER	24	Atlantic Ocean	92197.0000	7
OFFSHORE	0		92197.0000	7
SPECIES	1235	Flounder	269.0000	1
SPECIES	1970	King Whiting	2726.0000	1
SPECIES	2341	Mullet	75.0000	1
SPECIES	3447	Spotted Sea Trout	225.0000	1
SPECIES	5260	Unclassified for food	3445.0000	7
SPECIES	7000	Blue Crab, hard shell	85140.0000	9
SPECIES	8030	Squid	317.0000	2
WATER	36	Satilla River	243.0000	1
OFFSHORE	0		243.0000	1
SPECIES	4211	Sturgeon	243.0000	1
COUNTY	11	Chatham Co	1913525.00	1597
WATER	7	Isle of Hope River	321058.000	85
OFFSHORE	0		321058.000	85
SPECIES	5260	Unclassified Food Fish	3.0000	1
SPECIES	7000	Blue Crab, hard shell	310538.000	55
SPECIES	7020	Blue Crab, peeler	335.0000	3
SPECIES	7029	Blue Crab, soft shell	327.0000	6
SPECIES	7180	Stone Crab	8007.0000	9

CRITERION VARIABLE WEIGHT

VARIABLE	VALUE	LABEL	SUM	CASES
SPECIES	7750	Conch	1848.0000	11

WATER	9	Ogeechee River	49889.0000	110
OFFSHORE	0		49889.0000	110
SPECIES	661	Catfish, Bullhead	24400.0000	27
SPECIES	3471	Buck Shad	4495.0000	31
SPECIES	3472	Roe Shad	20790.0000	51
SPECIES	4211	Sturgeon	204.0000	1
WATER	11	Ossabaw Sound	178125.000	92
OFFSHORE	0		178125.000	92
SPECIES	7000	Blue crab (hard shell	176586.000	69
SPECIES	7023	Blue crab, Peeler	87.0000	3
SPECIES	7029	Blue crab, soft shell	255.0000	5
SPECIES	7030	Blue crab, combination	14.0000	1
SPECIES	7180	Stone Crab	854.0000	4
SPECIES	7750	Conch	329.0000	10
WATER	13	St Andrews Sound	3300.0000	2
OFFSHORE	0		3300.0000	2
SPECIES	3474	Shad	3300.0000	2
WATER	24	Atlantic Ocean	845126.000	975
OFFSHORE	0		534924.000	291
SPECIES	230		2.0000	1
SPECIES	570		35.0000	1
SPECIES	630		618.0000	5
SPECIES	661		3596.0000	7
SPECIES	1031		1.0000	1
SPECIES	1032		2230.0000	27
SPECIES	1141		3.0000	1
SPECIES	1235		622.0000	17
SPECIES	1423		214.0000	1
SPECIES	1970		4601.0000	21
SPECIES	2341		34.0000	1
SPECIES	3446		58.0000	2
SPECIES	3447		3137.0000	27
SPECIES	3472		1258.0000	[illegible]
SPECIES	3503		300.0000	
SPECIES	3560		51.0000	
SPECIES	3764		312.0000	
SPECIES	3765		48.0000	1
SPECIES	4060		109.0000	1
SPECIES	4590		6.0000	1
SPECIES	5260		32506.0000	39
SPECIES	7000		415318.000	60
SPECIES	7023		221.0000	2
SPECIES	7029		949.0000	14
SPECIES	7180		52839.0000	22
SPECIES	7510		6198.0000	18

CRITERION VARIABLE WEIGHT

VARIABLE	VALUE	LABEL	SUM	CASES
SPECIES	7750		9571.0000	9
SPECIES	7860		1.0000	1
SPECIES	7896		31.0000	2
OFFSHORE	1		25835.0000	42
SPECIES	661	Bullhead Catfish	1327.0000	3
SPECIES	1031	Black Drum	8.0000	1
SPECIES	1032	Red Drum	149.0000	2
	1970	King Whiting	91.0000	3
SPECIES	1141	Eel	102.0000	1
			77.0000	3

SPECIES	3341	mullet	100.0000	1
SPECIES	3447	Sp. Red Gag trout	50.0000	2
SPECIES	5260	Unclassified for food	19079.0000	15
SPECIES	7009	Blue crab	2150.0000	4
SPECIES	7130	Stone crab	4.0000	1
SPECIES	7756	Conch	1761.0000	5
OFFSHORE	2	3-12 miles	1062.0000	2
SPECIES	5260	Unclassified for food	1062.0000	2
OFFSHORE	3	12 miles & beyond	283305.000	640
SPECIES	30		1191.0000	11
SPECIES	130		42.0000	1
SPECIES	230		2571.0000	23
SPECIES	570		1035.0000	12
SPECIES	870		368.0000	4
SPECIES	1050		5734.0000	18
SPECIES	1052		65.0000	1
SPECIES	1410		3481.0000	33
SPECIES	1411		4062.0000	14
SPECIES	1413		42.0000	3
SPECIES	1414		8993.0000	16
SPECIES	1422		27.0000	1
SPECIES	1423		48388.0000	19
SPECIES	1424		17661.0000	17
SPECIES	1440		327.0000	2
SPECIES	1940		67432.0000	41
SPECIES	3026		128.0000	1
SPECIES	3295		1376.0000	2
SPECIES	3302		49747.0000	60
SPECIES	3306		60.0000	4
SPECIES	3308		87.0000	1
SPECIES	3351		4124.0000	28
SPECIES	3353		3801.0000	29
SPECIES	3355		2029.0000	30
SPECIES	3360		3162.0000	35
SPECIES	3501		245.0000	3
SPECIES	3759		45.0000	[redacted]
SPECIES	3762		100.0000	

CRITERION VARIABLE WEIGHT

VARIABLE	VALUE	LABEL	SUM	CASES
SPECIES	3763		100.0000	1
SPECIES	3764		11418.0000	52
SPECIES	3765		40033.0000	95
SPECIES	3768		23.0000	1
SPECIES	3840		24.0000	1
SPECIES	4474		3072.0000	10
SPECIES	4480		54.0000	1
SPECIES	4560		541.0000	14
SPECIES	4655		964.0000	5
SPECIES	4656		176.0000	4
SPECIES	4658		396.0000	4
SPECIES	4710		588.0000	6
SPECIES	4740		740.0000	7
SPECIES	5260		3016.0000	20
SPECIES	7300		11.0000	2
WATER	2	St Catherines Sound	267.0000	1
OFFSHORE	3		[illegible]	1
species	7000		267.0000	1

WATER	31	St Marys River	[illegible]	1
OFFSHORE	0		[illegible]	1
SPECIES	3472	Roe Shad	[illegible]	1
WATER	35	Sapeloe Sound	[illegible]	1
OFFSHORE	0		[illegible]	1
SPECIES	7510	Clams	[illegible]	1
WATER	39	Wassaw Sound	[illegible]	114
OFFSHORE	0		262279.000	114
SPECIES	4211	Sturgeon	70.0000	1
SPECIES	7000	Blue crab	251157.000	74
SPECIES	7028	Blue crab	335.0000	3
SPECIES	7029	Blue crab	510.0000	6
SPECIES	7130	Stone Crab	4043.0000	7
SPECIES	7510	Clams	4899.0000	11
SPECIES	7750	Conch	1765.0000	12
~~WATER~~	~~43~~ ?		~~120.0000~~	~~1~~
~~OFFSHORE~~	~~0~~		~~120.0000~~	~~1~~ INVALID
~~SPECIES~~	~~7029~~		~~120.0000~~	~~1~~
WATER	47	Savannah River	252345.000	213
OFFSHORE	0		252345.000	213
SPECIES	430	Carp	554.0000	1
SPECIES	461	Bullhead catfish	279.0000	4
SPECIES	1730	Hickory Shad	110.0000	7
SPECIES	3471	Buck Shad	11933.0000	31
SPECIES	3472	Roe Shad	58309.0000	51
SPECIES	4211	Sturgeon	260.0000	1

10 FEB 87 1987 GEORGIA LANDINGS BY COUNTY BY WATER BY SPECIES
06:23:14 NORTHWEST & ALASKA FISHERIES MCP 5.6 BURROUGHS 78

CRITERION VARIABLE WEIGHT

VARIABLE	VALUE	LABEL	SUM	CASES
SPECIES	7000	Blue Crab	177035.000	84
SPECIES	7028	Blue crab	177.0000	3
SPECIES	7029	Blue Crab	337.0000	7
SPECIES	7030	Blue crab	9.0000	1
SPECIES	7130	Stone Crab	2995.0000	10
SPECIES	7750	Conch	647.0000	13
COUNTY	15	Glynn Co	2458926.00	721
WATER	1	Altamaha River and Sound	84739.0000	93
OFFSHORE	0		84739.0000	93
SPECIES	461	Bullhead Catfish	7979.0000	22
SPECIES	1730	Hickory Shad	3.0000	1
SPECIES	3471	Buck Shad	414.0000	10
SPECIES	3472	Roe Shad	6580.0000	13
SPECIES	7000	Blue Crab	69676.0000	35
SPECIES	7028	Blue Crab	35.0000	2
SPECIES	7029	Blue Crab	30.0000	2
SPECIES	7750	Conch	22.0000	5
WATER	13	St. Andrews Sound	100718.000	38
OFFSHORE	0		100718.000	38
SPECIES	7000	Blue Crab	96273.0000	30
SPECIES	7029	Blue Crab	526.0000	3
SPECIES	7895	Oyster	97.0000	2
SPECIES	7896	Oyster	3752.0000	1

WATER	24	Atlantic Ocean	[illegible]	511
OFFSHORE	(1)?	Inshore (Estuarine)	[illegible]	2[illegible]
SPECIES	520	Butterfish	26.0000	1
SPECIES	570	Cubia	[illegible]	1
SPECIES	1025	Croaker	1[illegible].0000	3
SPECIES	1051	Black Drum	[illegible]	2
SPECIES	1082	Red Drum	[illegible].0000	12
SPECIES	1295	Flounder	9[illegible].0000	58
SPECIES	1740	King Mackerel	129.0000	1
SPECIES	1970	King Whiting	5[illegible].0000	51
SPECIES	2341	Mullet	594.0000	6
SPECIES	2720	Pompano	321.0000	6
SPECIES	3050 ?		30.0000	1
SPECIES	3345	Gray Sea Trout	131.0000	2
SPECIES	3347	Spotted Sea Trout	4[illegible].0000	38
SPECIES	3505	Shark	649.0000	7
SPECIES	3560	Sheepshead	9[illegible].0000	15
SPECIES	3840	Spanish Mackerel	152.0000	4
SPECIES	4060	Spot	119.0000	3
SPECIES	4211	Stingaree	104.0000	2
SPECIES	4590	Triple tail	200.0000	2
SPECIES	5260	Unclassified or Sand	[illegible].0000	51
SPECIES	7000	Blue Crab	1[illegible]00.00	20
SPECIES	7028	Blue Crab	4383.0000	5

10 FEB 89 1987 GEORGIA LANDINGS BY COUNTY BY WATER BY SPECIES PAGE 9
06:23:19 NORTHWEST & ALASKA FISHERIES MCP 3.6 BURROUGHS 78

CRITERION VARIABLE WEIGHT

VARIABLE	VALUE	LABEL	SUM	CASES
SPECIES	7027	Blue Crab	6134.0000	21
SPECIES	7180	Stone Crab	12004.0000	25
SPECIES	7750	Conch	94401.0000	32
SPECIES	8020	Squid	56.0000	3
OFFSHORE	1	0-3 miles offshore	521463.000	40
SPECIES	7000	Blue Crab	51464.0000	16
SPECIES	7750	Conch	470004.000	24
OFFSHORE	2	3-12 miles offshore	100.0000	2
SPECIES	1295	Flounder	30.0000	1
SPECIES	1970	King Whiting	70.0000	1
OFFSHORE	3	12 miles or beyond	559.0000	12
SPECIES	30		12.0000	1
SPECIES	1050		63.0000	2
SPECIES	1940		414.0000	7
SPECIES	3360		68.0000	1
SPECIES	3764		2.0000	1
WATER	33	Saint Simons Sound	294379.000	76
OFFSHORE	0		294379.000	76
SPECIES	7000	Blue Crab	[illegible].000	44
SPECIES	7028	Blue Crab	148.0000	2
SPECIES	7027	Blue Crab	118.0000	2
SPECIES	7750	Conch	183.0000	6
WATER	36	Satilla River	1503.0000	3
OFFSHORE	0		1503.0000	3
SPECIES	441	Bullhead Catfish	1503.0000	3
COUNTY	17	Liberty Co	[illegible].000	1
Water ~~offshore~~	24		343.0000	1
	7000	Blue Crab	343.0000	1

NUS CORPORATION AND SUBSIDIARIES — **TELECON NOTE**

CONTROL NO.	DATE: November 21, 1988	TIME: 9:30

DISTRIBUTION:

File
Chatham County, Georgia

BETWEEN: Chuck Rabolli	OF: GA Natural Heritage Inventory GA-DNR	PHONE: (404) 557-2514

AND: Geoffrey Carton, NUS Corporation

DISCUSSION:

In the general area near Savannah the following endangered or threatened species may be found:

Shortnosed Sturgeon
Atlantic Green Sea Turtle
Hawksbill Turtle
Brown Pelican
Manatee
Bald Eagle
Probably a number of plants

On request, their office will do a file search and study of endangered and threatened species in any area of the state. GC

ACTION ITEMS:

ENDANGERED AND THREATENED SPECIES

U.S. FISH AND WILDLIFE SERVICE

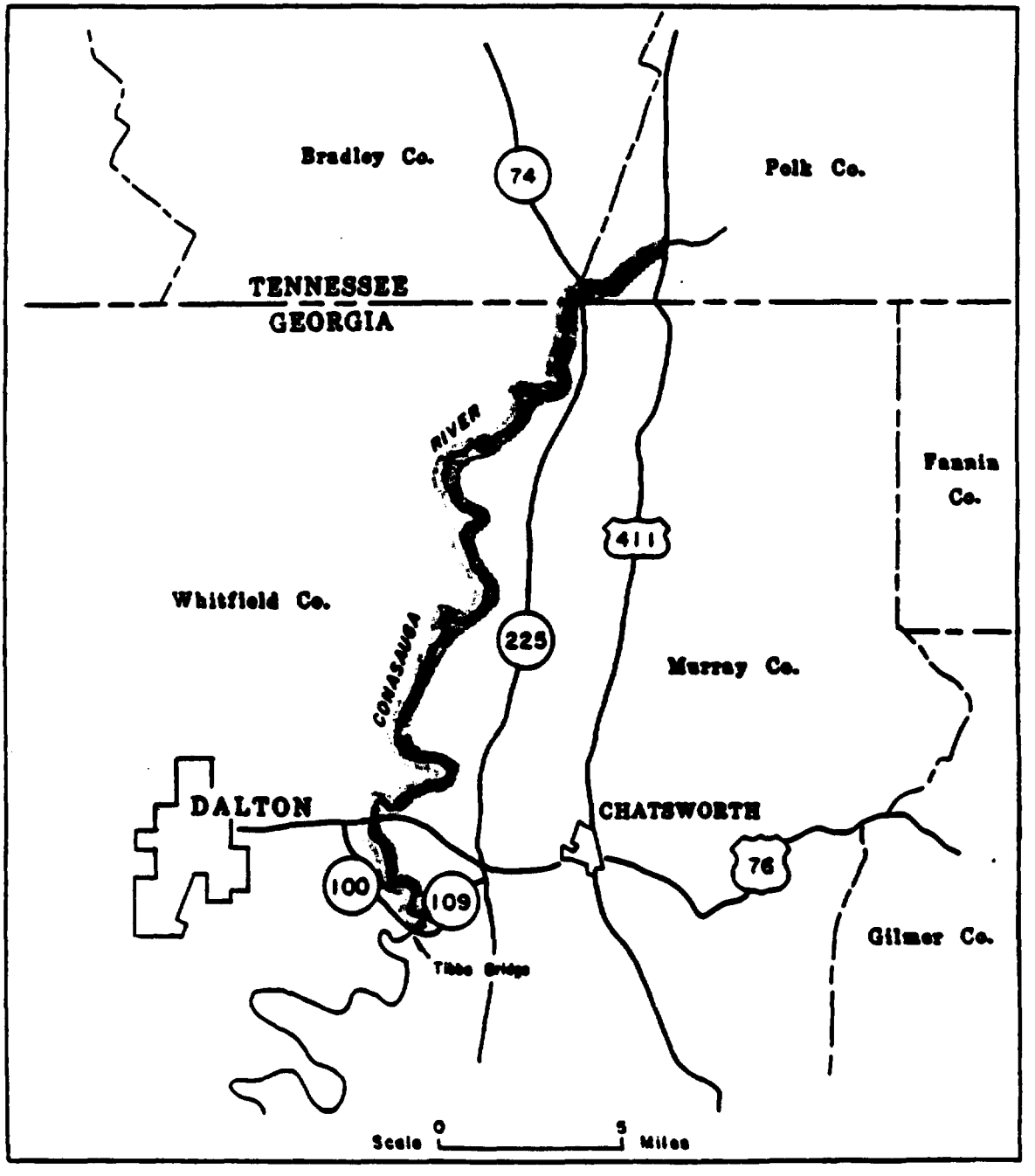
REGION 4 - ATLANTA

GEORGIA - Critical Habitat

Percina antesella, "amber darter"

Conasauga River from the U.S. Route 411 bridge in Polk County, Tennessee, downstream approximately 33.5 miles through Bradley County, Tennessee and Murray and Whitfield Counties, Georgia, to the Tibbs Bridge Road bridge (Murray County Road 109 and Whitfield County Road 100).

Constituent elements include high quality water, riffle areas (free of silt) composed of sand, gravel, and cobble which becomes vegetated primarily with Podostemum during the summer.

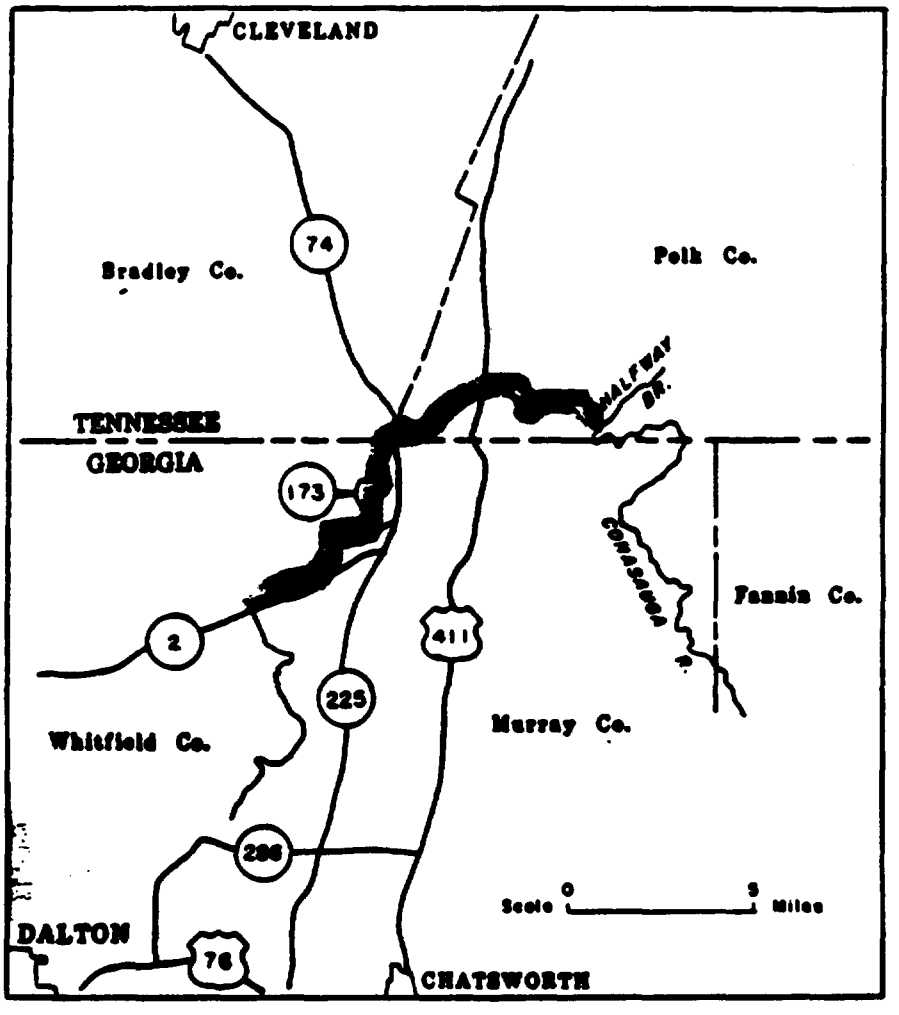


GEORGIA - Critical Habitat

Percina jenkinsi, "Conasauga logperch"

Conasauga River from the confluence of Halfway Branch with the Conasauga River in Polk County, Tennessee, downstream approximately 11 miles to the Georgia State Highway 2 bridge, Murray County, Georgia.

Constituent elements include high quality water, pool areas with flowing water and silt free riffles with gravel and rubble substrate, and fast riffle areas and deeper chutes with gravel and small rubble.



HAZARD RANKING SYSTEM SCORING SUMMARY

FOR

GULFSTREAM AEROSPACE
EPA SITE NUMBER F4880906
SAVANNAH
CHATHAM COUNTY, GA
EPA REGION: 4

SCORE STATUS: IN PREPARATION

SCORED BY RONALD WILDE
OF NUS
ON 11/08/89

DATE OF THIS REPORT: 11/20/89
DATE OF LAST MODIFICATION: 11/20/89

GROUND WATER ROUTE SCORE	:	29.93
SURFACE WATER ROUTE SCORE	:	11.54
AIR ROUTE SCORE	:	0.00
MIGRATION SCORE	:	18.56

[redacted] GROUND WATER ROUTE SCORE

CATEGORY/FACTOR	RAW DATA	ASN. VALUE	SCORE
1. OBSERVED RELEASE	NO	0	0
2. ROUTE CHARACTERISTICS			
DEPTH TO WATER TABLE	180 FEET		
DEPTH TO BOTTOM OF WASTE	6 FEET		
DEPTH TO AQUIFER OF CONCERN	174 FEET	0	0
PRECIPITATION	48.0 INCHES		
EVAPORATION	44.0 INCHES		
NET PRECIPITATION	4.0 INCHES	1	1
PERMEABILITY	1.0X10-6 CM/SEC	1	
PHYSICAL STATE		3	
TOTAL ROUTE CHARACTERISTICS SCORE:			
3. CONTAINMENT		3	3
4. WASTE CHARACTERISTICS			
TOXICITY/PERSISTENCE:ASSIGNED VALUE,18			18
WASTE QUANTITY CUBIC YDS	10000		
DRUMS	0		
GALLONS	0		
TONS	0		
TOTAL	10000 CU. YDS	8	8
TOTAL [redacted]RISTICS SCORE:			26
5. TA[redacted]			
GR[redacted]		3	9
DISTANCE TO NEAREST WELL	3696 FEET		
AND	MATRIX VALUE	35	35
TOTAL POPULATION SERVED	14374 PERSONS		
NUMBER OF HOUSES	240		
NUMBER OF PERSONS	13435		
NUMBER OF CONNECTIONS	7		
NUMBER OF IRRIGATED ACRES	0		
TOTAL TARGETS SCORE:			44

GROUND WATER ROUTE SCORE (Sgw) = 29.93

[redacted]S SURFACE WATER ROUTE SCORE

CAT[redacted]	RAW DATA	ASN. VALUE	SCORE
1. OBSERVED RELEASE	NO	0	0
2. ROUTE CHARACTERISTICS			
SITE LOCATED IN SURFACE WATER	NO		
SITE WITHIN CLOSED BASIN	NO		
FACILITY SLOPE	1.0 %		
INTERVENING SLOPE	1.0 %	0	0
24-HOUR RAINFALL	4.0 INCHES	3	3
DISTANCE TO DOWN-SLOPE WATER	528 FEET	3	6
PHYSICAL STATE	3		3
TOTAL ROUTE CHARACTERISTICS SCORE:			[redacted]
3. CONTAINMENT	3		
4. WASTE CHARACTERISTICS			
TOXICITY/PERSISTENCE:ASSIGNED VALUE,18			18
WASTE QUANTITY CUBIC YDS	10000		
DRUMS	0		
GALLONS	0		
TONS	0		
TOTAL	10000 CU. YDS	8	8
TOTAL WASTE CHARACTERISTICS SCORE:			26
5. TA[redacted]			
S[redacted]		2	6
D[redacted] E ENVIRONMENTS		1	2
[redacted]	7920 FEET		
[redacted] NDS	NONE		
CRITICAL HABITAT	NONE		
DISTANCE TO STATIC WATER	> 3 MILES		
DISTANCE TO WATER SUPPLY INTAKE	> 3 MILES		
AND	MATRIX VALUE	0	0
TOTAL POPULATION SERVED	0		
NUMBER OF HOUSES	0		
NUMBER OF PERSONS	0		
NUMBER OF CONNECTIONS	0		
NUMBER OF IRRIGATED ACRES	0		
TOTAL TARGETS SCORE:			8

SURFACE WATER ROUTE SCORE (Ssw) = 11.64

HRS AIR ROUTE SCORE

CATEGORY FACTOR	RAW DATA	ASN. VALUE	SCORE
1. OBSERVED RELEASE	NO	0	0

2. WASTE CHARACTERISTICS

REACTIVITY:

MATRIX VALUE

INCOMPATIBILITY

TOXICITY

WASTE QUANTITY CUBIC YARDS
DRUMS
GALLONS
TONS

TOTAL

TOTAL WASTE CHARACTERISTICS SCORE:

3. TARGETS

POPULATION WITHIN 4-MILE RADIUS
0 to 0.25 mile
0 to 0.50 mile
0 to 1.0 mile
0 to 4.0 miles

DISTANCE TO SENSITIVE ENVIRONMENTS
COASTAL WETLANDS
FRESH-WATER WETLANDS
CRITICAL HABITAT

DISTANCE TO LAND USES
[redacted]RIAL
[redacted]ENTIAL
[redacted]HIN VIEW?

TOTAL TARGETS SCORE: N/A

AIR ROUTE SCORE (Sa) = 0.00

HAZARD RANKING SYSTEM SCORING CALCULATIONS
FOR
[redacted]ITE: GULFSTREAM AEROSPACE
AS OF 11/20/89

GROUN[redacted]ER ROUTE SCORE

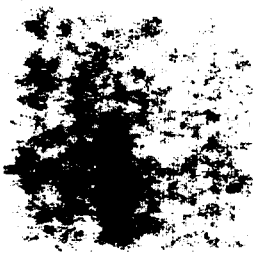
ROUTE CHARACTERISTICS		5
CONTAINMENT	X	3
WASTE CHARACTERISTICS	X	26
TARGETS	X	44

= 17160 /57,330 X 100 = 29.93 = S_{gw}

SURFACE WATER ROUTE SCORE

ROUTE CHARACTERISTICS		12
CONTAINMENT	X	3
WASTE CHARACTERISTICS	X	26
TARGETS	X	8

= 7488 /64,350 X 100 = 11.64



AIR ROUTE SCORE

OBSERVED RELEASE 0 /35,100 X 100 = 0.00 = S_{air}

SUMMARY OF MIGRATION SCORE CALCULATIONS

	S	S^2
[redacted] SCORE (S_{gw})	29.93	895.80
[redacted]E SCORE (S_{sw})	11.64	135.49
[redacted]$_{air}$)	0.00	0.00
$S^2_{gw} + S^2_{sw} + S^2_{air}$		1031.29
$\sqrt{(S^2_{gw} + S^2_{sw} + S^2_{air})}$		32.11
$S_M = \sqrt{(S^2_{gw} + S^2_{sw} + S^2_{air})}/1.73$		18.56

RECONNAISSANCE CHECKLIST FOR HRS2 CONCERNS

Instructions: Obtain as much "up front" information as possible prior to conducting fieldwork. Complete the form in as much detail as you can, providing attachments as necessary. Cite the source for all information obtained.

Site name: Gulfstream American Corp.
City, County, State: Savannah, Chatham County, GA
EPA ID No.: GA9061022216
Person responsible for form:
Date:

Air Pathway

Describe any potential air emission sources onsite: none known

Identify any sensitive environments within 4 miles: saltmarsh

Identify the maximally exposed individual (nearest residence or regularly occupied building - workers do count): Coastal Corrections Institute

Groundwater Pathway

Identify any areas of karst terrain: none

Identify additional population due to consideration of wells completed in overlying aquifers to the AOC: none

Do significant targets exist between 3 and 4 miles from the site? no

Is the AOC a sole source aquifer according to Safe Drinking Water Act? (I.e. is the site located in Dade, Broward, Volusia, Putnam, or Flager County, Florida) no

Surface Water Pathway

Are there intakes located on the extended 15-mile migration pathway?

Are there recreational areas, sensitive environments, or human food chain targets (fisheries) along the extended pathway? Food Chain - Commercial Fisheries, wetlands

Onsite Exposure Pathway

Is there waste or contaminated soil onsite at 2 feet below land surface or higher?

Not able to view the whole facility

Is the site accessible to non-employees (workers do not count)?

No - heavily fenced - guards at both entrances.

Are there residences, schools, or daycare centers onsite or in close proximity?

No

Are there barriers to travel (e.g., a river) within one mile?

No

Geophysical Reconnaissance Checklist

1. Take representative photos that show site.

2. Note all man-made features and their relative distances from areas of interest.
   SAVANNAH AIRPORT BACKS up to the facility.
3. The presence of background areas near suspected waste areas is important. If there is a vacant lot, field, etc. next to the site, inquire about ownership so that access can be obtained if necessary. Yes- 18th Tactical Airlift - Air Nat Guard.

4. Show or describe site conditions. Is it wooded, brushy? Can it be easily walked over?
   The site is a large facility - vegetation exists on the east + northside
5. Type of soil, moisture content. Typical depth to water table.

6. Geology of area.

7. Information on wells.

M.2 - SITE MAINTENANCE FORM

ACTION: _

EPA ID : GAD061022216

SITE NAME: GULFSTREAM AMERICAN CORP SOURCE: H

STREET : TRAVIS FIELD CONG DIST: 01

CITY : SAVANNAH ZIP: 31402

CNTY NAME: CHATHAM CNTY CODE : 051

LATITUDE : 32/04/42.0 LONGITUDE : 081/05/36.0

LL-SOURCE: R LL-ACCURACY:

SMSA : 7520 HYDRO UNIT: 03060109

INVENTORY IND: Y REMEDIAL IND: Y REMOVAL IND: N FED FAC IND: N

NPL IND: N NPL LISTING DATE: NPL DELISTING DATE:

SITE/SPILL IDS:

RPM NAME: RAY WILKERSON RPM PHONE: 404-347-2234

SITE CLASSIFICATION: SITE APPROACH:

DIOXIN TIER: REG FLD1: REG FLD2: 8

RESP TERM: PENDING ( ) NO FURTHER ACTION ( )

ENF DISP: NO VIABLE RESP PARTY ( ) VOLUNTARY RESPONSE ( )
ENFORCED RESPONSE ( ) COST RECOVERY ( )

SITE DESCRIPTION:

PENDING (_) NO FURTHER ACTION (_)

M.2 - PROGRAM MAINTENANCE FORM

ACTION: _

SITE: GULFSTREAM AMERICAN CORP

EPA ID: GAD061022216 PROGRAM CODE: H01 PROGRAM TYPE: _

PROGRAM QUALIFIER: ALIAS LINK : ___ ___

PROGRAM NAME: SITE EVALUATION _____

DESCRIPTION:

_____

_____

_____

_____

M.2 - EVENT MAINTENANCE FORM

* ACTION: _ *

SITE: GULFSTREAM AMERICAN CORP
PROGRAM: SITE EVALUATION

EPA ID: GAD061022216 PROGRAM CODE: H01 EVENT TYPE: DS1

FMS CODE: EVENT QUALIFIER : EVENT LEAD: E * _ ___ _ *

EVENT NAME: DISCOVERY STATUS: * _____ _ *

DESCRIPTION:

* _____ *
* _____ *
* _____ *
* _____ *

	ORIGINAL	CURRENT	ACTUAL			
START:		START:	START:	* __/__/__	__/__/__	__/__/__ *
COMP :		COMP :	COMP : 08/01/80	* __/__/__	__/__/__	__/__/__ *

HQ COMMENT:

* _____ *

RG COMMENT:

* _____ *

COOP AGR #	AMENDMENT #	STATUS	STATE %				
			0	* _____	_____	__	__ *

M.2 - EVENT MAINTENANCE FORM

* ACTION: _ *

SITE: GULFSTREAM AMERICAN CORP
PROGRAM: SITE EVALUATION

EPA ID: GAD061022216 PROGRAM CODE: H01 EVENT TYPE: PA1

FMS CODE: EVENT QUALIFIER : EVENT LEAD: S * _ ___ _ *

EVENT NAME: PRELIMINARY ASSESSMENT STATUS: * _____ _ *

DESCRIPTION:

* _____ *
* _____ *
* _____ *
* _____ *

	ORIGINAL	CURRENT	ACTUAL			
START:		START:	START: 03/01/85	* __/__/__	__/__/__	__/__/__ *
COMP :		COMP :	COMP : 03/01/85	* __/__/__	__/__/__	__/__/__ *

HQ COMMENT:

* _____ *

RG COMMENT:

* _____ *

COOP AGR #	AMENDMENT #	STATUS	STATE %				
			0	* _____	_____	_	___ *

M.2 - COMMENT MAINTENANCE FORM

SITE: GULFSTREAM AMERICAN CORP

EPA ID: GAD061022216

COM NO	COMMENT	ACTION
001	PART A- ON FILE	* - _____ *
		* _____ *

SITE SUMMARY
GULFSTREAM AMERICAN CORPORATION
SAVANNAH, GEORGIA
GAD061022216

The site is located in the northeast corner of Travis Field which serves as the municipal airport for the City of Savannah. The site was the location of a Grumman aircraft plant from the late 1940's until 1976. The facility was purchased in 1976 by Gulfstream Aerospace Corporation. Both Grumman and Gulfstream apparently manufactured parts for aircraft engines at the facility.

When Gulfstream purchased the facility, one area of the property (cross-hatched, Attachment B) contained over 200 deteriorating and leaking drums, many of which contained solvents or wastes of an unknown nature. According to Mark Smith, EPD compliance officer for the facility, the drum site was cleaned up by Gulfstream and two impoundments were constructed nearby to hold chromium bearing sludge from their waste water treatment plant. Four of the seven monitoring wells located around the site have solvent and chromium contamination. Gulfstream has submitted their GHWMA Part B permit and is currently assessing the extent of ground water contamination at the site.

The site is assessed as "no priority" for inspection because the Georgia Hazardous Waste Management Act regulates all prior releases at active TSD facilities. All corrective actions regarding hazardous waste at the facility will be the responsibility of the Facilities Compliance Unit of the Industrial and Hazardous Waste Management Program of the Georgia EPD.

CSW/mcw050

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 1 - SITE INFORMATION AND ASSESSMENT

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
GA	D061022216

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site)	02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER
Gulfstream American Corporation	Savannah Municipal Airport

03 CITY	04 STATE	05 ZIP CODE	06 COUNTY	07 COUNTY CODE	08 CONG DIST
Savannah	GA	331402	Chatham	051	01

09 COORDINATES LATITUDE	LONGITUDE
32° 08' 12.0"	081° 11' 37.0"

10 DIRECTIONS TO SITE (Starting from nearest public road)

Take Georgia Highway 21 north from Savannah to a point 1,000 feet south of the Savannah filtration plant. Turn left and proceed for 1 mile.

III. RESPONSIBLE PARTIES

01 OWNER (If known)	02 STREET (Business, mailing, residential)
Gulfstream Aerospace Corporation	P. O. Box 2206

03 CITY	04 STATE	05 ZIP CODE	06 TELEPHONE NUMBER
Savannah	GA	31402	(912) 964-3160

07 OPERATOR (If known and different from owner)	08 STREET (Business, mailing, residential)

09 CITY	10 STATE	11 ZIP CODE	12 TELEPHONE NUMBER
			( )

13 TYPE OF OWNERSHIP (Check one)

☒ A. PRIVATE ☐ B. FEDERAL: _____ (Agency name) ☐ C. STATE ☐ D. COUNTY ☐ E. MUNICIPAL

☐ F. OTHER: _____ (Specify) ☐ G. UNKNOWN

14 OWNER/OPERATOR NOTIFICATION ON FILE (Check all that apply)

☒ A. RCRA 3001 DATE RECEIVED: 03/18/81 (MONTH DAY YEAR) ☐ B. UNCONTROLLED WASTE SITE (CERCLA 103 c) DATE RECEIVED: __/__/__ (MONTH DAY YEAR) ☐ C. NONE

IV. CHARACTERIZATION OF POTENTIAL HAZARD

01 ON SITE INSPECTION

☒ YES ☐ NO DATE 07/21/83 (MONTH DAY YEAR)

by Mike Arnett

BY (Check all that apply)

☐ A. EPA ☐ B. EPA CONTRACTOR ☒ C. STATE ☐ D. OTHER CONTRACTOR

☐ E. LOCAL HEALTH OFFICIAL ☐ F. OTHER: _____ (Specify)

CONTRACTOR NAME(S): _____

02 SITE STATUS (Check one)

☒ A. ACTIVE ☐ B. INACTIVE ☐ C. UNKNOWN

03 YEARS OF OPERATION

about 1945 (BEGINNING YEAR) continuing (ENDING YEAR) ☐ UNKNOWN

04 DESCRIPTION OF SUBSTANCES POSSIBLY PRESENT, KNOWN, OR ALLEGED

Methylene Chloride arsenic
lead methyl ethyl ketone
cadmium
chromium

05 DESCRIPTION OF POTENTIAL HAZARD TO ENVIRONMENT AND/OR POPULATION

The Georgia Hazardous Waste Management Act regulates all prior releases at active TSD facilities.

V. PRIORITY ASSESSMENT

01 PRIORITY FOR INSPECTION (Check one. If high or medium is checked, complete Part 2 - Waste Information and Part 3 - Description of Hazardous Conditions and Incidents)

☐ A. HIGH (Inspection required promptly) ☐ B. MEDIUM (Inspection required) ☐ C. LOW (Inspect on time available basis) ☒ D. NONE (No further action needed, complete current disposition form)

VI. INFORMATION AVAILABLE FROM

01 CONTACT	02 OF (Agency/Organization)	03 TELEPHONE NUMBER
William Overstreet	Gulfstream Aerospace Corporation	(912) 964-3160

04 PERSON RESPONSIBLE FOR ASSESSMENT	05 AGENCY	06 ORGANIZATION	07 TELEPHONE NUMBER	08 DATE
Steve Walker	DNR-EPD	RAU	(404) 656-7404	01/29/85 (MONTH DAY YEAR)

EPA FORM 2070-12 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 2 - WASTE INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
GA	D061022216

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 PHYSICAL STATES *(Check all that apply)*

- ☐ A. SOLID
- ☐ B. POWDER, FINES
- ☒ C. SLUDGE
- ☐ D. OTHER _____ *(Specify)*
- ☐ E. SLURRY
- ☒ F. LIQUID
- ☐ G. GAS

02 WASTE QUANTITY AT SITE
(Measures of waste quantities must be independent)

TONS _____
CUBIC YARDS _____
NO. OF DRUMS _____

03 WASTE CHARACTERISTICS *(Check all that apply)*

- ☒ A. TOXIC
- ☐ B. CORROSIVE
- ☐ C. RADIOACTIVE
- ☐ D. PERSISTENT
- ☐ E. SOLUBLE
- ☐ F. INFECTIOUS
- ☐ G. FLAMMABLE
- ☒ H. IGNITABLE
- ☐ I. HIGHLY VOLATILE
- ☐ J. EXPLOSIVE
- ☐ K. REACTIVE
- ☐ L. INCOMPATIBLE
- ☐ M. NOT APPLICABLE

III. WASTE TYPE

CATEGORY	SUBSTANCE NAME	01 GROSS AMOUNT	02 UNIT OF MEASURE	03 COMMENTS
SLU	SLUDGE	Unknown	----	contains Cr-6, in Impoundment
OLW	OILY WASTE			
SOL	SOLVENTS	Unknown	----	Detected in monitoring wells
PSD	PESTICIDES			
OCC	OTHER ORGANIC CHEMICALS			
IOC	INORGANIC CHEMICALS			
ACD	ACIDS			
BAS	BASES			
MES	HEAVY METALS	Unknown	----	Cr-6 in Impoundment

IV. HAZARDOUS SUBSTANCES *(See Appendix for most frequently cited CAS Numbers)*

01 CATEGORY	02 SUBSTANCE NAME	03 CAS NUMBER	04 STORAGE/DISPOSAL METHOD	05 CONCENTRATION	06 MEASURE OF CONCENTRATION
SLU-MES	Cr-6 in sludge	999	Impoundment	Unknown	
SOL	1,1 dichloroethane, and dichloroethene	999	-----	.01-28	mg/L

V. FEEDSTOCKS *(See Appendix for CAS Numbers)*

CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER	CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER
FDS			FDS		
FDS			FDS		
FDS			FDS		
FDS			FDS		

VI. SOURCES OF INFORMATION *(Cite specific references, e.g., state files, sample analysis, reports)*

RCRA Part A application, memo from M. Arnett to M. Smith 12-22-83,
Memo from S. Maxwell to M. Smith 10-24-83,
Phone conversation with M. Smith (GA EPD) 1-11-85
Attachments

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
GA	D061022216

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 [X] A. GROUNDWATER CONTAMINATION — 02 [X] OBSERVED (DATE: 4/30/84) — ☐ POTENTIAL — ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: Unknown — 04 NARRATIVE DESCRIPTION

Monitoring wells on the property are contaminated with methylene chloride dichloroethane and ethene and chromium.

01 ☐ B. SURFACE WATER CONTAMINATION — 02 ☐ OBSERVED (DATE: _____) — ☐ POTENTIAL — ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION

01 ☐ C. CONTAMINATION OF AIR — 02 ☐ OBSERVED (DATE: _____) — ☐ POTENTIAL — ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION

01 ☐ D. FIRE/EXPLOSIVE CONDITIONS — 02 ☐ OBSERVED (DATE: _____) — ☐ POTENTIAL — ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION

01 ☐ E. DIRECT CONTACT — 02 ☐ OBSERVED (DATE: _____) — ☐ POTENTIAL — ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION

01 [X] F. CONTAMINATION OF SOIL — 02 ☐ OBSERVED (DATE: _____) — [X] POTENTIAL — ☐ ALLEGED
03 AREA POTENTIALLY AFFECTED: Unknown (Acres) — 04 NARRATIVE DESCRIPTION

Soil in and around the drum storage area. See attachment B.

01 ☐ G. DRINKING WATER CONTAMINATION — 02 ☐ OBSERVED (DATE: _____) — ☐ POTENTIAL — ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION

01 ☐ H. WORKER EXPOSURE/INJURY — 02 ☐ OBSERVED (DATE: _____) — ☐ POTENTIAL — ☐ ALLEGED
03 WORKERS POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION

01 ☐ I. POPULATION EXPOSURE/INJURY — 02 ☐ OBSERVED (DATE: _____) — ☐ POTENTIAL — ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
GA	D061022216

II. HAZARDOUS CONDITIONS AND INCIDENTS *(Continued)*

01 ☐ J. DAMAGE TO FLORA — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ K. DAMAGE TO FAUNA — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION *(Include name(s) of species)*

01 ☐ L. CONTAMINATION OF FOOD CHAIN — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ M. UNSTABLE CONTAINMENT OF WASTES *(Spills/runoff/standing liquids/leaking drums)* — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

01 ☐ N. DAMAGE TO OFFSITE PROPERTY — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ P. ILLEGAL/UNAUTHORIZED DUMPING — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

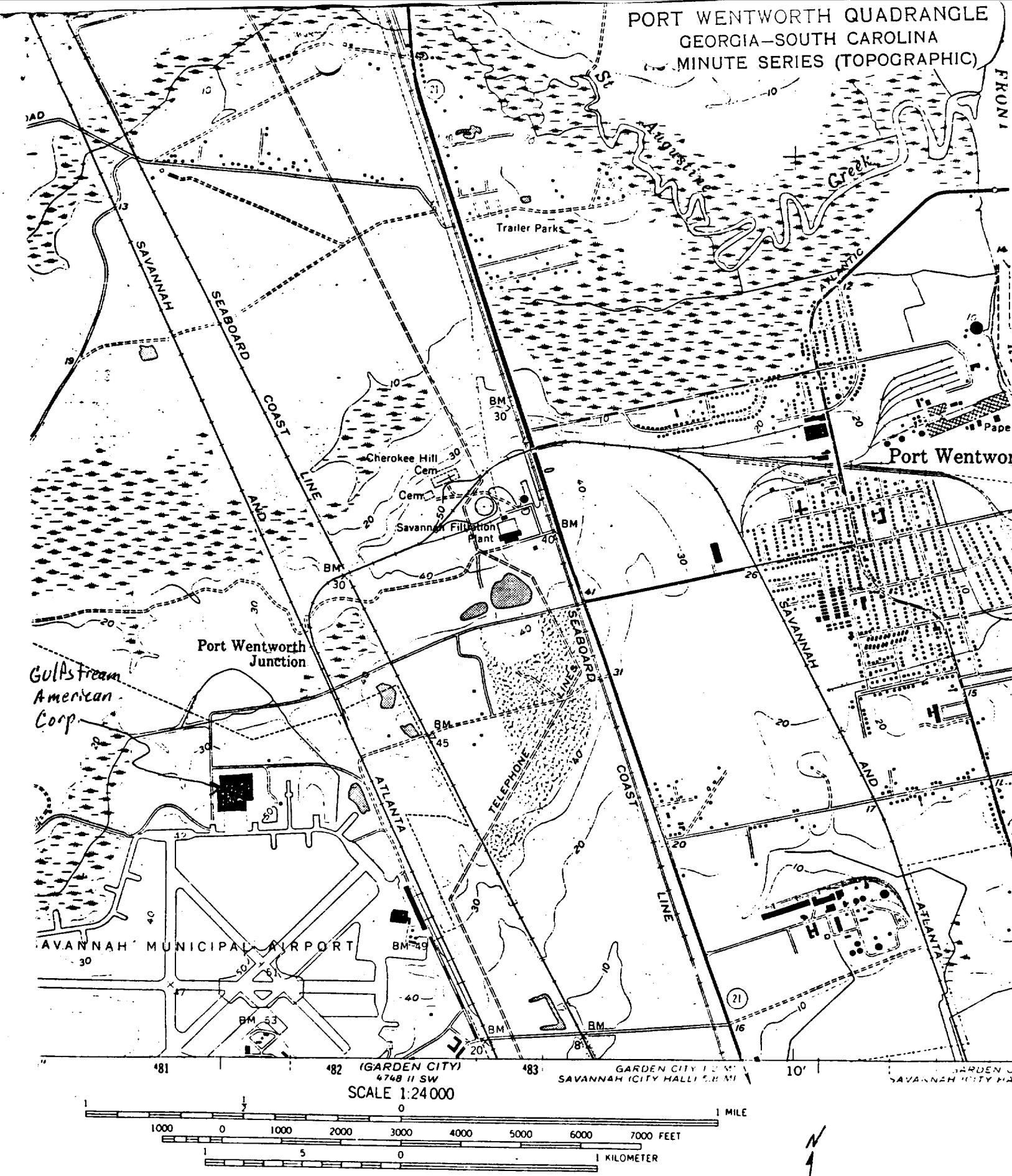
05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

III. TOTAL POPULATION POTENTIALLY AFFECTED: _____

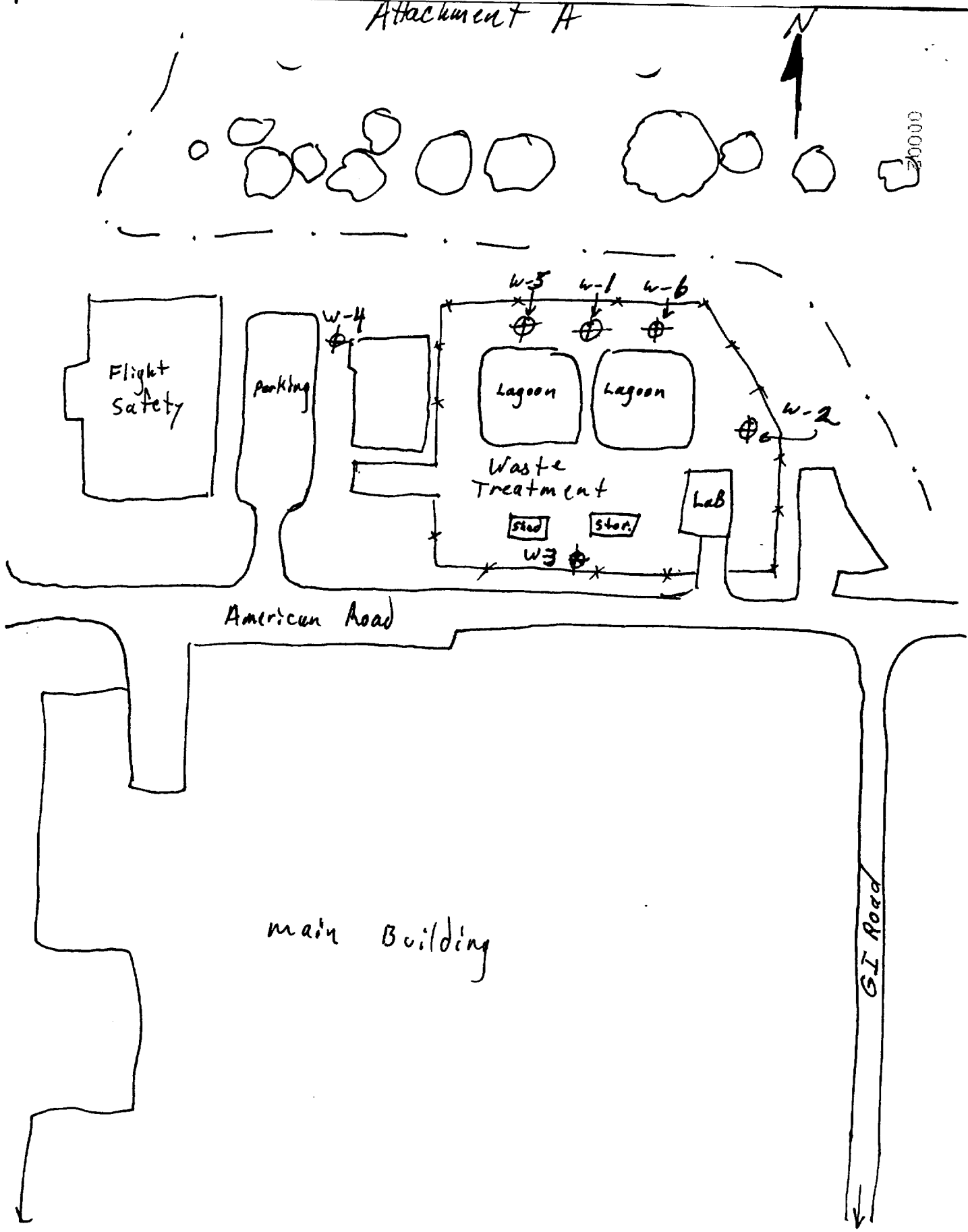
IV. COMMENTS

V. SOURCES OF INFORMATION *(Cite specific references, e.g., state files, sample analysis, reports)*

Groundwater monitoring report (9-21-83) from Gulfstream, phone conversation with Mark Smith (GA EPD) on 1-27-84 and on 1-11-85.

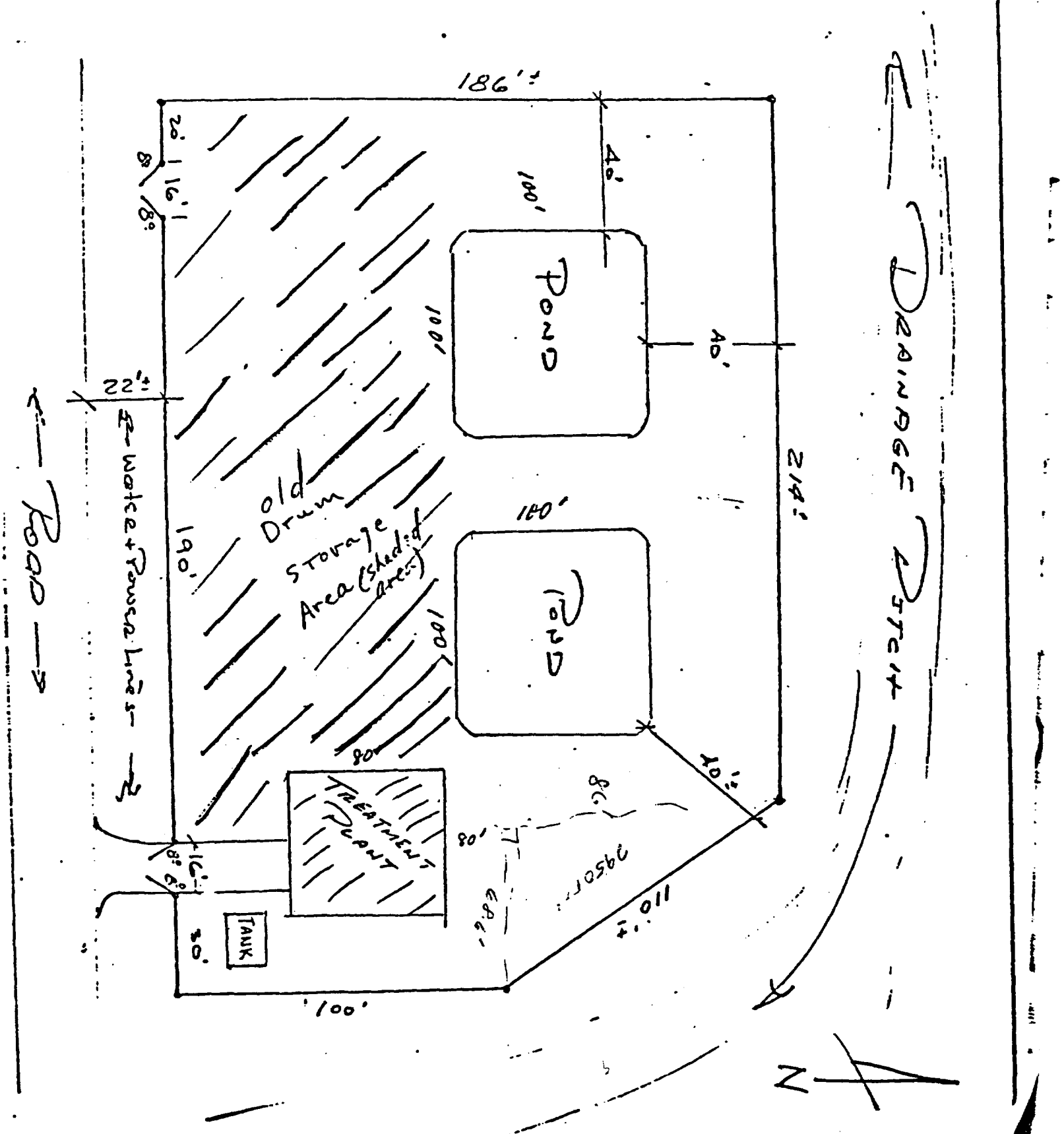

PORT WENTWORTH QUADRANGLE
GEORGIA—SOUTH CAROLINA
MINUTE SERIES (TOPOGRAPHIC)
St. Augustine Creek
Trailer Parks
SAVANNAH AND SEABOARD COAST LINE
ATLANTIC
Cherokee Hill Cem.
Cem.
Savannah Filtration Plant
Port Wentworth Junction
Gulfstream American Corp.
SEABOARD COAST LINE
TELEPHONE LINE
ATLANTA AND
SAVANNAH MUNICIPAL AIRPORT
BM 30
BM 45
BM 49
BM 53
481
482
(GARDEN CITY)
4748 II SW
483
SCALE 1:24000
1 MILE
7000 FEET
1 KILOMETER
CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL
DEPTH CURVES AND SOUNDINGS IN FEET—DATUM IS MEAN LOW WATER
SHORELINE SHOWN REPRESENTS THE APPROXIMATE LINE OF MEAN HIGH WATER
THE MEAN RANGE OF TIDE IS 7 FEET AT PORT WENTWORTH
GEORGIA
QUADRANGLE LOCATION

Attachment A



Sketch Showing location of wells around waste treatment area.

1" = 100'


186'±
20'
16'
8°
8°
40'
100'
POND
100'
40'
22'±
214'±
Water + Power Lines
190'
Old Drum Storage Area (Skeletal Area)
100'
POND
100'
80'
40'±
TREATMENT PLANT
80'
80'
80'
10'
8°
8°
TANK
30'
100'
295'±
110'±
Drainage Ditch
Road